Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	267188	preamorphization or (preadj2 amorpho$8)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:47
L2	86423	preamorphization or (preadj2 amorpho$8) with (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:56
L3	275378	(dop$6 or implant$6) with ("B" or boron or "As" or arsenic or "P" or phosphorous)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:51
L4	86870	preamorphization or (preadj2 amorph$9) with (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:57
L5	10857	l4 same l3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:48
L6	15218	(dop$6 or implant$6) with l4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:51
L7	8145	l6 same l3	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:50
L8	58347	((si or silicon) near5 (substrate or layer$12 or film$1)) with l4	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:52
L9	11651	(dop$6 or implant$6) with l8	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:51
L10	184912	(dop$6 or implant$6) near5 ("B" or boron or "As" or arsenic or "P" or phosphorous)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:08

L11	4373	l9 same l10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:52
L12	35275	((si or silicon) near5 (substrate or layer$12 or film$1)) with l10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:52
L13	3832	l12 same l9	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:53
L14	18970	(dop$6 or implant$6) near5 ("Si+" or (silicon near5 ion$1))	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:53
L15	464	l13 same l14	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:54
L16	77995	preamorphization or (preadj2 amorph$9) near5 (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:55
L17	446	l15 same l16	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:56
L18	199	preamorphization or (pre adj2 amorpho$8) with (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:57
L19	334	preamorphization or (pre adj2 amorph$9) with (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:57
L20	86870	preamorphization or (amorph$9) with (silicon or si)	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:57

L21	2688	l14 same l20	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:58
L22	63	l14 same l19	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:58
L23	906	l10 same l21	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 14:58
L24	27	l10 same l22	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:07
L25	2688	l14 same l21	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:07
L26	570	l12 same l21	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:08
L27	570	l12 same l23	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:09
L28	5	(grating or waveguid$6) and l27	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:11
L29	290	l19 and l10	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:11
L30	112	l19 and l12	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:12

L31	76	l14 and l30	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:13
L32	2	EP-806794-$.did.	US-PGPUB; USPAT; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2006/01/26 15:14

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 NEWS 10  JAN 13  New IPC 8 SEARCH, DISPLAY, and SELECT enhancements added to
                  INPADOC
 NEWS 11  JAN 17  Pre-1988 INPI data added to MARPAT
 NEWS 12  JAN 17  IPC 8 in the WPI family of databases including WPIFV

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                                                            ENTRY    SESSION
FULL ESTIMATED COST                                          0.06       0.27

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                                                            ENTRY    SESSION
FULL ESTIMATED COST                                          0.21       0.48

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=> s (grating or coupler or DFG)
L1       142298 (GRATING OR COUPLER OR DFG)

=> s cystal?(5a)silicon
L2            0 CYSTAL?(5A) SILICON

=> s crystal?(5a)silicon
L3        72758 CRYSTAL?(5A) SILICON

=> s amorphous(5a)silicon
L4        63412 AMORPHOUS(5A) SILICON

=> s l1 and l2 and l5
L5 NOT FOUND
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of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> s l1 and l3 and l4
L5           36 L1 AND L3 AND L4

=> d all 1-36

L5   ANSWER 1 OF 36  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:1284944  CAPLUS
ED   Entered STN:  08 Dec 2005
TI   Room-temperature luminescence from Er-doped SiOx films containing Si
     nanoparticles
AU   Chen, Wei-de; Chen, Chang-yong; Bian, Liu-fang
CS   Institute of Semiconductors, Chinese Academy of Sciences, Beijing, 100083,
     Peop. Rep. China
SO   Faguang Xuebao (2005), 26(5), 647-650
     CODEN: FAXUEW; ISSN: 1000-7032
PB   Kexue Chubanshe
DT   Journal
LA   Chinese
CC   73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB   Er3+ photoluminescence (PL) in silicon-based materials has been attracting
     much interest because of its potential application in Si-based
     optoelectronic devices.  Er3+ ions can be doped into different hosts, such
     as   ***cryst***   .   ***silicon***   , hydrogenated   ***amorphous***
       ***silicon***   suboxide (a-SiOx:H), SiO2 film contg. Si nanocrystals and
     so on.  In this report PL properties of undoped and Er3+-doped SiOx films
     contg. amorphous Si nanoparticles were studied.  A-SiOx films contg. Si
     nanoparticles were prepd. by plasma enhanced chem. vapor deposition
     (PECVD) using a gas source with mixt. of SiH4 and N2O.  Erbium ions were
     implanted into as-deposed SiOx films at 500 keV with a varying dose range
     of (1 .apprx. 3) .times. 1015/cm2 and then annealed at 300 .apprx. 900
     .degree.C for 30 s under N2.  Visible PL expts. were performed with a
     Dilor XY-800 triple   ***grating***   spectrometer with a charge-coupled
     device (CCD) detector.  The samples were excited by 514.5 nm line of Ar+
     laser.  The Er3+ IR PL spectra were measured using FTIR spectrometer
     (Bruker IFS120HR).  The wavelength of Ar+ laser is 514.5 .mu.m and the
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nominal laser power was 200 mW. The results showed that the PL intensity from nc-Si in SiO2 at 750 nm is one order of magnitude stronger than that from ***amorphous*** ***silicon*** clusters in a-SiOx:H, and the PL intensity from Er3+ at 1.54 .mu.m in Er doped a-SiOx:H is a factor of 4 higher than that in Er doped SiO2. The PL and crystallinity of a-SiOx:H as function of annealing temp. were also studied. In combination with the Raman measurement, the results show that photoluminescence from amorphous Si nanoparticles also follows the quantum confinement model as in Si-nanocrystals. Our study indicates that a competitive relationship between the light emissions of a-Si clusters and Er3+ in the Er-doped a-SiOx:H film is also present and the films yield efficient Er3+ emission even superior to that of Er doped SiO2 contg. Si nanocrystals, suggesting a-Si clusters can also act as both the absorbing medium and sensitizer in Er3+ excitation as nc-Si in Er doped SiO2. Er3+ emission intensity does not depend strongly upon whether it is nc-Si or a-Si clusters. These results presented here open up a route towards the fabrication of efficient Si-based light-emitting devices.

AN 2005:1022149 CAPLUS
ED Entered STN: 22 Sep 2005
TI Microstructure of femtosecond laser-induced ***grating*** in ***amorphous*** ***silicon***
AU Lee, Geon Joon; Park, Jisun; Kim, Eun Kyu; Lee, YoungPak; Kim, Kyung Moon; Cheong, Hyeonsik; Yoon, Chong Seung; Son, Yong-Duck; Jang, Jin
CS Quantum Photonic Science Research Center and Department of Physics, Hanyang University, Seoul, 133-791, S. Korea
SO Optics Express (2005), 13(17), 6445-6453
CODEN: OPEXFF; ISSN: 1094-4087
URL: http://www.opticsexpress.org/view_file.cfm?doc=%24%29LO%2DK0%20%20%0A&id=%25%28%2C3%2FJ%2C%2C%20%0A
PB Optical Society of America
DT Journal; (online computer file)
LA English
CC 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The femtosecond laser-induced ***grating*** (FLIG) formation and ***crystn*** . were investigated in ***amorphous*** ***silicon*** (a-Si) films, prepd. on glass by plasma-enhanced chem.-vapor deposition. Probe-beam diffraction, micro-Raman spectroscopy, at. force microscopy, SEM, and transmission electron microscopy were employed to characterize the diffraction properties and the microstructures of FLIGs. It was found that i) the FLIG can be regarded as a pattern of alternating a-Si and microcryst.-silicon (.mu.c-Si) lines with a period of about 2 .mu.m, and ii) efficient ***grating*** formation and crystn. were achieved by high-intensity recording with a short writing period.
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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AN 2005:999434 CAPLUS
DN 144:78810
ED Entered STN: 15 Sep 2005
TI Two-dimensional patterned nc-Si arrays prepared by the method of laser interference crystallization
AU Zou, He-Cheng; Feng, Qiao; Wu, Liang-Cai; Huang, Xin-Fan; Xin, Li; Han, Pei-Gao; Ma, Zhong-Yuan; Li, Wei; Chen, Kun-Ji
CS State Key Laboratory of Solid Microstructures, Department of Physics, Nanjing University, Nanjing, 210093, Peop. Rep. China
SO Wuli Xuebao (2005), 54(8), 3646-3650
CODEN: WLHPAR; ISSN: 1000-3290
PB Zhongguo Kexueyuan Wuli Yanjiuso
DT Journal
LA Chinese
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
AB The method of laser-induced crystn. combining with the phase-shifting ***grating*** mask (PSGM) was carried out to fabricate nanocryst. silicon (nc-Si) with the two-dimensional (2D) patterned distribution within a-SiNx/a-Si:H/a-SiNx sandwiched structure grown on the SiO2/Si or fused quartz substrate by plasma-enhanced chem. vapor deposition technique. The thicknesses of a-Si:H and a-SiNx layer are 10 and 50 nm, resp. The results of at. force microscopy, cross-section transmission electron microscopy and high resoln. transmission electron microscopy show that the controllable crystd. regions within the initial a-Si:H layer are selectively formed with a diam. of about 250 nm and are patterned with the same 2D periodicity of 2.0 .mu.m as that of the PSGM. Si nanocrystallites, the size of which is almost the same as the thickness of the a-Si:H layer, are formed in the crystd. regions, and have <111> preferred orientation.
ST nanocryst ***silicon*** laser ***crystn*** patterning semiconductor heterostructure nanostructure
IT Photomasks (lithographic masks)
(phase-shifting ***gratings*** ; two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT Vapor deposition process
(plasma; two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT Crystal orientation
Heterojunction semiconductor devices
Interference
Laser crystallization
Microstructure
Nanocrystalline materials
Nanostructures
(two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT 1333-74-0, Hydrogen, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(in ***amorphous*** hydrogenated ***silicon*** ; two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT 7631-86-9, Silica, processes 60676-86-0, Fused quartz
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(substrate; two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT 7440-21-3P, Silicon, properties
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PYP (Physical process); PREP (Preparation); PROC (Process)
(two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)
IT 12033-89-5P, Silicon nitride, properties
RL: PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PYP (Physical process); PREP (Preparation); PROC (Process)
(two-dimensional patterned nc-Si arrays prepd. by laser interference crystn.)

L5 ANSWER 4 OF 36 CAPLUS
AN 2005:696501 CAPLUS

DN 143:184889
ED Entered STN: 05 Aug 2005
TI Laser annealing apparatus and annealing method of semiconductor thin film using the same
IN Hongo, Mikio; Yazaki, Akio; Hatano, Mutsuko
PA Japan
SO U.S. Pat. Appl. Publ., 21 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01L021-00
ICS H01S003-13; H01J001-52; H01L021-84; G01J005-02; G21K001-00; H01J003-00; G02B005-00; H01J005-18; H01J029-46
INCL 438166000; 250341100; 372029010; 250505100
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 47, 74, 75
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005170572	A1	20050804	US 2004-986936	20041115
	JP 2005217213	A2	20050811	JP 2004-22461	20040130
PRAI	JP 2004-22461	A	20040130		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005170572	ICM	H01L021-00
	ICS	H01S003-13; H01J001-52; H01L021-84; G01J005-02; G21K001-00; H01J003-00; G02B005-00; H01J005-18; H01J029-46
	INCL	438166000; 250341100; 372029010; 250505100
	IPCI	H01L0021-00 [ICM,7]; H01S0003-13 [ICS,7]; H01J0001-52 [ICS,7]; H01L0021-84 [ICS,7]; G01J0005-02 [ICS,7]; G21K0001-00 [ICS,7]; H01J0003-00 [ICS,7]; G02B0005-00 [ICS,7]; H01J0005-18 [ICS,7]; H01J0029-46 [ICS,7]
	NCL	438/166.000
	ECLA	G02B027/09C; G02B027/09E2L2
JP 2005217213	IPCI	H01L0021-268 [ICM,7]; H01L0021-20 [ICS,7]
	FTERM	5F052/AA02; 5F052/BA01; 5F052/BA07; 5F052/BA12; 5F052/BA18; 5F052/BB01; 5F052/BB02; 5F052/BB07; 5F052/DA01; 5F052/DA02; 5F052/JA01

AB A laser beam temporally modulated in amplitude by a modulator and shaped into a long and narrow shape by a beam shaper is rotated around the optical axis of an image rotator inserted between the beam shaper and a substrate. Thus, the longitudinal direction of the laser beam having the long and narrow shape is rotated around the optical axis on the substrate. To perform annealing in a plurality of directions on the substrate, the laser beam shaped into the long and narrow shape is rotated on the substrate while a stage mounted with the substrate is moved only in two directions, i.e., X- and Y-directions. In such a manner, the substrate can be scanned at a high speed with a continuous wave laser beam modulated temporally in amplitude and shaped into a long and narrow shape, without rotating the substrate. Thus, a semiconductor film can be annealed in a a large no. of different directions. The annealing app. is reduced in size and wt. and has extended use time. It is also much cheaper then conventional app. This app. is particularly suitable for treating display panels.

ST laser annealing app semiconductor film planar display

IT Semiconductor films
(amorphous; laser annealing app. and annealing method of semiconductor thin film)

IT Laser annealing
Rotation
(app.; laser annealing app. and annealing method of semiconductor thin film)

IT Amorphous semiconductors
(films; laser annealing app. and annealing method of semiconductor thin film)

IT Optical instruments
(kaleidoscope; laser annealing app. and annealing method of semiconductor thin film)

IT Diffraction ***gratings***
Holders

Laser annealing
Laser crystallization
Lasers
Semiconductor films
(laser annealing app. and annealing method of semiconductor thin film)
IT Lenses
(laser focusing; laser annealing app. and annealing method of semiconductor thin film)
IT 7440-21-3, ***Silicon*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(***crystn*** . of ***amorphous*** for displays; laser annealing app. and annealing method of semiconductor thin film)

L5 ANSWER 5 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:378736 CAPLUS
DN 143:375999
ED Entered STN: 03 May 2005
TI Simulation and fabrication of ***amorphous*** ***silicon*** rib-type arrayed waveguide ***grating***
AU Liu, Wen-Jen; Cheng, Yen-Hsin; Chen, Steven; Lai, I-Tsen; Lai, Yin-Chieh; Weng, Min-Hang; Shih, Yung-Hui; Lee, Chung-Da
CS Department of Material Scence and Engineering, I-Shou Univ., Kaohsiung, Taiwan
SO Proceedings of SPIE-The International Society for Optical Engineering (2005), 5723(Optical Components and Materials II), 285-296
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Arrayed waveguide ***gratings*** have become key components in modern WDM systems for their multi-functional and multi-application properties. To avoid potential large bending losses and device footprints the technique of high index contrast (HIC) has been developed. ***Amorphous*** ***silicon*** (a-Si) with HIC feature can be exactly grown by plasma enhanced chem. vapor deposition (PECVD) to achieve reasonable material structure and optical properties. Therefore, a-Si silicon-on-insulator AWG (SOI-AWG) shows excellent promise and can provide key practical devices in DWDM systems for their appropriate characteristics that are inexpensive by mass prodn. similar manufg. processes with VLSI, and easily integrated with other optical electronic ICs. ***Amorphous*** ***silicon*** SOI-AWG device with 59% extra high refractive index difference (.DELTA.) and the transmission spectrum of AWG's device indicated the insertion loss, crosstalk and side-lobe were lower than -3.5 dB, -25 dB and -45 dB, resp., by 3D beam propagation method were investigated in this study. The smallest chip size of the whole device is smaller than 4.5 cm x 1.2 cm, and the highest coupling loss of the rib waveguide for single mode fiber was about -1.68 dB. Based on the simulation results, the device will be really fabricated by thin-film deposition, photolithog. and dry-etching processes. Optical measurements of ***amorphous*** ***silicon*** films indicated, the refractive index index and the extinction coeff. at 1550 nm wavelength were evidently variable by changing argon/silane (Ar/SiH4) flow rates, RF power and operating vacuum pressure in the range of 300.apprx.500 sccm, wattages of 40.apprx.100 W, and 30.apprx.60 Pa, resp., for 200.degree.C substrate temp. The more refractive index of a-Si films indicated possessing less point defects, dangling bonds, voids, and more hydrogen content and ***silicon*** nano- ***crystd*** . structures. Meanwhile, the more point defects, dangling bonds, ***silicon*** nano- ***crystd*** . structures, and less voids and hydrogen content result in larger extinction coeff. Therefore, we adopted the suitable deposition rate and refractive index at 1550nm wavelength were 0.6 nm/s and 3.5012, resp., to perform real AWG fabrication. From at. force microscopy (AFM) anal. revealed the increased argon/silane flow rate and RF power wattage, and decreased operating vacuum would increase surface roughness. High-resoln. transmission electron microscopy (HRTEM) anal. indicated ***amorphous*** ***silicon*** films mainly had ***amorphous*** structure with few ***silicon*** nano- ***crystd*** . structures, point defects and voids might affect the value of the refractive index and

reliability. The structures of the a-Si films all indicated amorphous
structure by x-ray diffraction (XRD) anal.

ST ***amorphous*** ***silicon*** rib type arrayed waveguide
grating simulation fabrication

IT Vapor deposition process
(plasma; simulation and fabrication of ***amorphous***
silicon rib type arrayed waveguide ***grating***)

IT Optical properties
Photolithography
SOI devices
Waveguides
(simulation and fabrication of ***amorphous*** ***silicon***
rib type arrayed waveguide ***grating***)

IT 7440-21-3, ***Silicon*** , properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(***amorphous*** ; simulation and fabrication of ***amorphous***
silicon rib type arrayed waveguide ***grating***)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

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AN 2005:378721 CAPLUS

DN 143:375995

ED Entered STN: 03 May 2005

TI Simulation and fabrication of silicon oxynitride array waveguide
grating for optical communication

AU Liu, Wen-Jen; Lai, Yin-Chieh; Weng, Min-Hang; Chen, Chih-Min; Lee,
Peng-Hsiao

CS Department of Material Science and Engineering, I-Shou Univ., Kaohsiung,
Taiwan

SO Proceedings of SPIE-The International Society for Optical Engineering
(2005), 5723(Optical Components and Materials II), 43-54
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)

AB The transport capacity in optical communication systems ahs grown
tremendously in the past years to satisfy the needs of the rapidly
expanding telecommunication market that the transport of data
substantially exceeded the multimedia aggregated rate. Arrayed waveguide
gratings (called AWG's or PHASAR's) have become key components in
modern WEM systems for their multi-functional and multi-application
properties. Silicon oxynitride (SiOxNy) grown by plasma enhanced chem.
vapor deposition (PECVD) is well-suited for the realized application of
high contrast waveguides for the range of the refractive index can be
largely tuned (1.45-2.0). SiOxNy AWG device with 3% refractive index
difference (.DELTA.) and the transmission spectrum of AWG's device
indicated the insertion loss, crosstalk and side-lobe were lower than -3
dB, -15 dB and -40 dB, resp., by 3D beam propagation method were

investigated in this study. The chip size of the whole device is smaller than 4 cm x 1.5 cm, and the highest coupling loss of the rib waveguide for single mode fiber was about -1.6 dB. Based on the simulation results, the device can be really fabricated by thin-film deposition, photo-lithog. and dry-etching processes. Microstructural evolution anal. revealed over-supplied ***silicon*** atoms would form ***silicon*** nano- ***crystd*** . structure in the ***amorphous*** optical films for lower N2O/(N2+NH3) ratio, and resulted in higher refractive index and extinction coeff. From the SEM (SEM) features of rib-type silicon oxynitride waveguide, we found the profile, and the roughness of side- and top-walls of waveguide reached to the manufg. criteria of AWG device. We had successfully fabricated an AWG device with 8 channels and 1.6nm channel spacing, and the coupling loss and propagation loss were about -2.24 dB and -0.15 dB/cm, resp. While, the AWG device performances need further improvements by modified design, uniform thin film deposition, and accurate dry-etching processes.

ST optical communication silicon oxynitride array waveguide ***grating*** simulation fabrication

IT Stress, mechanical
  (residual; simulation and fabrication of silicon oxynitride array waveguide ***grating*** for optical communication)

IT Absorptivity
Microstructure
Optical communication
Refractive index
Surface roughness
Waveguides
  (simulation and fabrication of silicon oxynitride array waveguide ***grating*** for optical communication)

IT 11105-01-4, Silicon oxynitride
RL: DEV (Device component use); PRP (Properties); USES (Uses)
  (simulation and fabrication of silicon oxynitride array waveguide ***grating*** for optical communication)

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L5 ANSWER 7 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:230628 CAPLUS
DN 141:45035
ED Entered STN: 22 Mar 2004
TI Two-dimensional patterned nanocrystalline Si array prepared by laser interference crystallization of ultra-thin amorphous Si:H single-layer
AU Huang, Xinfan; Wang, Xiaowei; Qiao, Feng; Zhu, Leyi; Li, Wei; Li, Xuefei; Chen, Kunji; Kang, Lin
CS National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, 210093, Peop. Rep. China
SO International Journal of Nanoscience (2002), 1(5 & 6), 603-609
CODEN: IJNNAJ; ISSN: 0219-581X
PB World Scientific Publishing Co. Pte. Ltd.
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73
AB We employ the method of phase-modulated KrF excimer pulsed laser interference ***crystn*** . to fabricate nanometer-sized ***cryst*** . ***silicon*** with two-dimensional patterned distribution within the

ultra-thin amorphous Si:H single-layer. The local phase transition occurs in ultra-thin a-Si:H film after laser interference crystn. under proper energy d. The results of at. force microscopy, Raman scattering spectroscopy, cross-section transmission electron microscopy and SEM demonstrate that Si nanocrystallites are formed within the initial a-Si:H single-layer, selectively located in the distal regions with the diam. of 250 nm and patterned with the same 2D periodicity of 2.0 .mu.m as the phase-shifting ***grating*** . The results demonstrate that the present method can be used to fabricate patterned nanocryst. Si films for device applications.

ST two dimensional patterned nanocryst ***silicon*** array laser interference ***crystn*** ; ***amorphous*** hydrogenated ***silicon*** ultrathin film laser interference ***crystn***

IT Laser radiation
(pulsed; two-dimensional patterned nanocryst. Si array prepd. by laser interference crystn. of ultra-thin amorphous Si:H single-layer)

IT Laser crystallization
Nanocrystals
Surface structure
Ultrathin films
(two-dimensional patterned nanocryst. Si array prepd. by laser interference crystn. of ultra-thin amorphous Si:H single-layer)

IT 7440-21-3, Silicon, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(hydrogen-doped; two-dimensional patterned nanocryst. Si array prepd. by laser interference crystn. of ultra-thin amorphous Si:H single-layer)

IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(silicon doped with; two-dimensional patterned nanocryst. Si array prepd. by laser interference crystn. of ultra-thin amorphous Si:H single-layer)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L5 ANSWER 8 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:389165 CAPLUS
DN 139:141643
ED Entered STN: 21 May 2003
TI Patterned structures of silicon nanocrystals prepared by pulsed laser interference crystallization of ultra-thin a-Si:H single-layer
AU Wang, Xiaowei; Qiao, Feng; Zhu, Leyi; Li, Wei; Li, Jian; Huang, Xinfan; Chen, Kunji
CS National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, 210093, Peop. Rep. China
SO Materials Research Society Symposium Proceedings (2003), 737(Quantum Confined Semiconductor Nanostructures), 419-424
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB The authors employ the method of phase-modulated KrF excimer pulsed laser interference ***crystn*** . to fabricate nanometer-sized ***cryst***

. ***silicon*** (nc-Si) with the two-dimensional (2D) patterned distribution within the ultra-thin a-Si:H single-layer. The local crystn. occurs after interference laser irradn. under proper energy d. The results of at. force microscopy, Raman scattering spectroscopy, cross-section TEM and SEM demonstrate that Si nano-crystallites are formed within the initial a-Si:H single-layer, selectively located in the discal regions with the diam. of 350 nm and patterned with the same 2-dimensional periodicity of 2.0 .mu.m as the phase-shifting ***grating*** . The present method can be used to fabricate patterned nc-Si films for device applications.

ST ***amorphous*** hydrogenated ***silicon*** ultrathin layer laser interference ***crystn***

IT Atomic force microscopy
Crystallization
Laser interferometry
Nanocrystals
Raman spectra
Semiconductor device fabrication
Semiconductor materials
Transmission electron microscopy
(structures of ***silicon*** nanocrystals prepd. by pulsed laser interference crystn. of ultra-thin a-Si:H single-layer)

IT 1333-74-0, Hydrogen, uses
RL: MOA (Modifier or additive use); USES (Uses)
(structures of silicon nanocrystals prepd. by pulsed laser interference crystn. of ultra-thin a-Si:H single-layer)

IT 7440-21-3P, Silicon, uses
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(structures of silicon nanocrystals prepd. by pulsed laser interference crystn. of ultra-thin a-Si:H single-layer)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L5 ANSWER 9 OF 36 CAPLUS

AN 2003:191270 CAPLUS
DN 138:393227
ED Entered STN: 11 Mar 2003

TI Patterned distribution of silicon nanocrystals prepared by pulsed laser interference crystallization of an ultrathin a-Si:H single layer

AU Wang, Xiaowei; Qiao, Feng; Zhu, Leyi; Huang, Xinfan; Li, Jian; Li, Wei; Li, Xuefei; Kang, Lin; Chen, Kunji
CS National Laboratory of Solid State Microstructures and Department of Physics, Nanjing University, Nanjing, 210093, Peop. Rep. China

SO Journal of Physics: Condensed Matter (2003), 15(4), 609-615
CODEN: JCOMEL; ISSN: 0953-8984
PB Institute of Physics Publishing
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)

AB The authors employ the method of phase-modulated KrF excimer pulsed laser interference crystn. (LIC) to fabricate nanocryst. Si with a two-dimensional (2D) patterned distribution within an ultrathin a-Si:H single layer. A local phase transition occurs in the ultrathin a-Si:H film upon LIC with the appropriate energy d. The results from at. force

microscopy, Raman scattering spectroscopy, planar and cross-sectional TEM and SEM demonstrate that Si nanocrystallites are formed within the initial a-Si:H single layer, selectively located in disk-shaped regions with diams. of 250 nm and patterned with the same 2-dimensional periodicity of 2.0 .mu.m as the phase-shifting ***grating*** .

ST patterned distribution ***silicon*** nanocrystal laser interference ***crystn***

IT Laser ***crystallization***
Nanocrystals
(patterned distribution of ***silicon*** nanocrystals prepd. by pulsed laser interference ***crystn*** . of ultrathin ***amorphous*** hydrogenated ***silicon*** single layer)

IT 1333-74-0, Hydrogen, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(patterned distribution of silicon nanocrystals prepd. by pulsed laser interference ***crystn*** . of ultrathin ***amorphous*** hydrogenated ***silicon*** single layer)

IT 7440-21-3, Silicon, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(patterned distribution of silicon nanocrystals prepd. by pulsed laser interference ***crystn*** . of ultrathin ***amorphous*** hydrogenated ***silicon*** single layer)

RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(3) Chen, G; Phys Status Solidi a 1992, V129, P421
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(16) Wang, L; Appl Surf Sci 2000, V165, P85 CAPLUS
(17) Yoffe, A; Adv Phys 2001, V50, P1 CAPLUS

L5 ANSWER 10 OF 36 CAPLUS
AN 2003:58498 CAPLUS
DN 138:116341
ED Entered STN: 24 Jan 2003
TI Fabrication of semiconductor devices for dispersing a radiant energy transmission
IN Chason, Marc; Gamota, Daniel; Lempkowski, Robert
PA Motorola, Inc., USA
SO U.S. Pat. Appl. Publ., 36 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01L033-00
INCL 257103000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003015722	A1	20030123	US 2001-905935	20010717
PRAI	US 2001-905935		20010717		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003015722	ICM	H01L033-00
	INCL	257103000
	IPCI	H01L0033-00 [ICM,7]
	NCL	257/103.000
	ECLA	H01L021/822B; H01L027/15; H01L021/8258; H01L027/06C; H01L027/06E

AB The invention relates to the fabrication of semiconductor devices for dispersing a radiant energy transmission. High quality epitaxial layers of monocryst. materials can be grown overlying monocryst. substrates such as large silicon wafers by forming a compliant substrate for growing the monocryst. layers. An accommodating buffer layer consists of a layer of monocryst. oxide spaced apart from a ***silicon*** wafer by an ***amorphous*** interface layer of ***silicon*** oxide. The amorphous interface layer dissipates strain and permits the growth of a high quality monocryst. oxide accommodating buffer layer. The accommodating buffer layer is lattice matched to both the underlying silicon wafer and the overlying monocryst. material layer. Any lattice mismatch between the accommodating buffer layer and the underlying silicon substrate is taken care of by the amorphous interface layer. In addn., formation of a compliant substrate may include utilizing surfactant-enhanced epitaxy, epitaxial growth of single ***crystal*** ***silicon*** onto single ***crystal*** oxide, and epitaxial growth of Zintl phase materials.

ST semiconductor device dispersal radiant energy transmission

IT Semiconductor materials
(Group IIIA element pnictide, diffraction component material; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(amorphous, perovskite; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT Etching
Melting
(diffraction component formed by; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT Metals, uses
Polycarbonates, uses
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(diffraction component material; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT Diffraction ***gratings***
Diffractometers
Epitaxy
Light sources
Optical detectors
Semiconductor devices
(fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT Electromagnetic wave
(transmission; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT 1303-00-0, Gallium arsenide, uses 9003-53-6 22398-80-7, Indium phosphide, uses 37382-15-3, Aluminum gallium arsenide (AlGaAs) 106312-00-9, Gallium indium phosphide (GaInP)
RL: DEV (Device component use); USES (Uses)
(diffraction component material; fabrication of semiconductor devices for dispersing a radiant energy transmission)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(substrate; fabrication of semiconductor devices for dispersing a radiant energy transmission)

L5 ANSWER 11 OF 36 CAPLUS

AN 2001:602433 CAPLUS

DN 136:12425

ED Entered STN: 21 Aug 2001

TI Reversible Recording of Interference ***Gratings*** with a Diffraction Efficiency above 50% in an ***Amorphous*** Hydrogenized ***Silicon*** -Nematic Liquid ***Crystal*** Structure

AU Ivanova, N. L.; Onokhov, A. P.; Chaika, A. N.

CS Vavilov Optical Institute, State Scientific Center of the Russian Federation, St. Petersburg, 190164, Russia

SO Technical Physics Letters (Translation of Pis'ma v Zhurnal Tekhnicheskoi Fiziki) (2001), 27(8), 647-648
CODEN: TPLEED; ISSN: 1063-7850

PB MAIK Nauka/Interperiodica Publishing

DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 75
AB The properties of a space-time light modulator comprising an a-Si:H based p-i-n diode and a nematic liq. crystal layer were studied using a holog. technique. Under certain conditions, an asymmetry of the diffraction efficiency in the +1 and -1 diffraction orders was obsd. The max. diffraction efficiency in 1 of these orders may reach .ltoreq.52%, which is a record value for devices of this type.
ST interference ***grating*** recording ***amorphous*** hydrogenated ***silicon*** nematic liq ***crystal***
IT Optical diffraction
(efficiency of interference ***gratings*** in ***amorphous*** hydrogenated ***silicon*** -nematic liq. ***crystal*** structure)
IT Diffraction ***gratings***
(interference; reversible recording in ***amorphous*** hydrogenated ***silicon*** structure with)
IT Liquid crystals
(nematic; reversible recording of interference ***gratings*** in ***amorphous*** hydrogenated ***silicon*** structure with)
IT Optical modulators
(optically addressable space-time; reversible recording of interference ***gratings*** in ***amorphous*** hydrogenated ***silicon*** -nematic liq. ***crystal*** structure)
IT Holography
(reversible recording of interference ***gratings*** in ***amorphous*** hydrogenated ***silicon*** -nematic liq. ***crystal*** structure)
IT Recording
(reversible; of interference ***gratings*** in ***amorphous*** hydrogenated ***silicon*** -nematic liq. ***crystal*** structure)
IT 1333-74-0, Hydrogen, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(reversible recording of interference ***gratings*** in nematic liq. ***crystal*** structure with ***amorphous*** ***silicon*** contg.)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(reversible recording of interference ***gratings*** in nematic liq. crystal structure with hydrogenated amorphous)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L5 ANSWER 12 OF 36 CAPLUS
AN 1999:189714 CAPLUS
DN 130:318714
ED Entered STN: 23 Mar 1999
TI Formation of the patterned nanocrystalline Si by pulsed laser interference crystallization of a-Si:H thin films
AU Wang, Mingxiang; Chen, Kunji; Jiang, Ming; Liu, Xiaoyong; Wu, Zhuangchun; Li, Wei; Wang, Mu; Huang, Xinfan
CS State Key Laboratory of Solid State Microstructures and Department of, Nanjing University, Nanjing, 210093, Peop. Rep. China
SO Proceedings of SPIE-The International Society for Optical Engineering (1998), 3550(Laser Processing of Materials and Industrial Applications II), 80-84
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering

DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73, 76
AB A new method of prepg. patterned nanocryst. Si (nc-Si) by pulsed laser interference crystn. of a-Si:H thin films is reported. A KrF excimer pulsed laser with wavelength 248 nm and pulse duration 30 ns is employed as a coherent UV beam source; a 1-/2-dimensional (1D/2D) SiO2 phase-shifting ***grating*** was used to form a high-contrast laser interference pattern behind it. During the laser treatment, the a-Si:H film is placed behind near contact with the phase ***grating*** . A transient thermal 1D/2D grid is then directly formed on the sample, leading to the local crystn. of the a-Si:H films and forming of nanocryst. Si. The crystallinity of nc-Si films is verified by Raman scattering. At. force microscopy clearly shows a morphol. of 1D/2D regular submicron patterns formed by locally crystd. stripes/dots, which are composed of densely gathered crystallites with a lateral size of .apprx.50-100 nm and a height of .apprx.10-20 nm. The interfaces between the crystd. and the amorphous zones are abrupt. TEM demonstrates a lateral size distribution of nc-Si within the crystd. zones. This new approach has a potential application in the nanoelectronics and nano-optoelectronics.
ST laser interference ***crystn*** ***amorphous*** ***silicon*** patterned nanocryst formation
IT Laser ***crystallization***
Nanocrystals
(formation of patterned nanocryst. ***silicon*** by pulsed laser interference ***crystn*** . of ***amorphous*** hydrogenated ***silicon*** thin films)
IT Optical instruments
(phase shifters; formation of patterned nanocryst. ***silicon*** by pulsed laser interference ***crystn*** . of ***amorphous*** hydrogenated ***silicon*** thin films using silica phase shift ***grating***)
IT 1333-74-0, Hydrogen, processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(formation of patterned nanocryst. ***silicon*** by pulsed laser interference ***crystn*** . of ***amorphous*** hydrogenated ***silicon*** thin films)
IT 7440-21-3, Silicon, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(formation of patterned nanocryst. ***silicon*** by pulsed laser interference ***crystn*** . of ***amorphous*** hydrogenated ***silicon*** thin films)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Canham, L; Appl Phys Lett 1990, V57, P1046 CAPLUS
(2) Chen, K; Appl Phys Lett 1992, V61, P2069 CAPLUS
(3) Edelberg, E; Appl Phys Lett 1996, V68, P1415 CAPLUS
(4) Hill, K; Appl Phys Lett 1993, V62, P1035 CAPLUS
(5) Kunji, C; J Non-cryst Solids 1998, V227-230, P934
(6) Ming, J; submitted to J Chinese Laser
(7) Nebel, C; Mat Res Soc Symp Proc 1996, V420, P117 CAPLUS
(8) Ruckschloss, M; Appl Phys Lett 1993, V63, P1474
(9) Wang, M; Appl Phys Lett 1998, V72, P722 CAPLUS
(10) Wang, M; to be published in Appl Phys Lett 1998, V73 CAPLUS

L5 ANSWER 13 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1997:427805 CAPLUS
DN 127:128459
ED Entered STN: 10 Jul 1997
TI Resolution and response-time dependence of ferroelectric liquid-crystal optically addressed spatial light modulators on ***grating*** profiles
AU Perennes, F.; Wu, Z. Y.
CS Department d'Optique, Unite Mixte de Recherche, Centre Nationale de la Recherche 1329, Ecole Nationale Superieure des Telecommunications de Bretagne, Brest, 29285, Fr.
SO Applied Optics (1997), 36(17), 3825-3834
CODEN: APOPAI; ISSN: 0003-6935
PB Optical Society of America
DT Journal
LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 75, 76

AB We introduce a model to analyze the time response of an optically addressed spatial light modulator (OASLM) when a two-dimensional image is written on it. Comparison with exptl. results was performed using ***gratings*** as input images. For a given spatial frequency, we show that the response time of the device depends on the ***grating*** profile. The effect of the time-const. mechanism is demonstrated theor. and exptl. for a sinusoidal-wave and a square-wave intensity profile. An alternative explanation for the resoln. limitation of the OASLM that is related to the time-const. mechanism and a new method for measuring the resoln. of the device are proposed.

ST ferroelec liq crystal spatial light modulator; optically addressed ferroelec SLM ***grating***

IT Liquid crystals
(ferroelec.; resoln. and response time of ***grating*** profiles in optically addressed ferroelec. liq. crystal spatial light modulators)

IT Ferroelectric materials
(liq.-crystal; resoln. and response time of ***grating*** profiles in optically addressed ferroelec. liq. crystal spatial light modulators)

IT Electrooptical switches
Laser induced ***grating***
Simulation and Modeling, physicochemical
Spatial light modulators
(resoln. and response time of ***grating*** profiles in optically addressed ferroelec. liq. crystal spatial light modulators)

IT 12385-13-6, Hydrogen atom, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(doped ***silicon*** in photoaddressed ferroelec. liq. ***crystal*** spatial light modulator)

IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); USES (Uses)
(photoaddressed ferroelec. liq. ***crystal*** spatial light modulator using ***amorphous*** hydrogenated ***silicon*** layer)

IT 133758-42-6, SCE 13
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(resoln. and response time of ***grating*** profiles in optically addressed ferroelec. liq. crystal spatial light modulators)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Ashley, P; Appl Opt 1987, V26, P241 CAPLUS
(2) Barbier, P; Appl Opt 1992, V31, P3898 CAPLUS
(3) Barbier, P; Opt Eng 1994, V33, P1322 CAPLUS
(4) Fukushima, S; Jpn J Appl Phys 1994, V33, P5747 CAPLUS
(5) Hudson, T; Appl Opt 1991, V30, P2867 CAPLUS
(6) Li, W; IEEE Trans Electron Devices 1989, V30, P2959
(7) Pellat-Finet, P; Optik 1995, V100, P159
(8) Perennes, F; Ferroelectrics 1996, V181, P129 CAPLUS
(9) Roach, W; IEEE Trans Electron Devices 1974, VED-21, P453
(10) Wang, L; J Appl Phys 1995, V78, P6923 CAPLUS
(11) Wang, L; Opt Lett 1994, V19, P2033
(12) Williams, D; J Phys D 1988, V20, PS156

L5 ANSWER 14 OF 36 CAPLUS

AN 1995:808848 CAPLUS
DN 123:350793
ED Entered STN: 23 Sep 1995
TI Experimental and theoretical studies of hydrogenated amorphous semiconductor alloys and superlattices
AU Weisz, Z. S.; Gomez, M.
CS Puerto Rico Univ., Rio Piedras, P. R.
SO Report (1994), ARO-25715.6-MS-SAH; Order No. AD-A276159, 132 pp. Avail.: NTIS
From: Gov. Rep. Announce. Index (U. S.) 1994, 94(12), Abstr. No. 435,212
DT Report
LA English
CC 65-6 (General Physical Chemistry)
Section cross-reference(s): 66

AB We developed the photocarrier ***grating*** technique for carrier mobility-lifetime products (micro-Tau) measurements. Applying this technique to hydrogenated ***amorphous*** ***silicon*** (a-Si:H), we obtained micro-Tau values ranging from 10(exp-8) to 10(exp-5) sq. cm/V for the majority and 10(exp-10)-10(exp-8) for the minority carrier. This served as a basis for quality evaluation of prepd. by different methods. We established that the dominant recombination mechanism is the defect pool mechanism. Using the semiconductor-electrolyte system, we studied the d. of localized states in a-Si-H and compared it to ***cryst*** . ***silicon*** . We found in a-Si:H an overall d. of localized states in 10(exp-18)/cu cm. In cryst. Si only surface states were found, of an overall d. of 10(exp-12) cm. The sq cm states are centered around 0.2 eV the conduction band edge. The transport properties of two other disordered systems that may be relevant to a-Si-H were studied theor. These systems consists of metal cermets and of small colloidal suspensions.

ST hydrogenated amorphous semiconductor alloy superlattice

IT Colloids
Electric current carriers
Electrolytes
Semiconductor materials, amorphous
Surface
Suspensions
Transport process and property
(exptl. and theor. studies of hydrogenated amorphous semiconductor alloys and superlattices)

IT Order
(disorder, exptl. and theor. studies of hydrogenated amorphous semiconductor alloys and superlattices)

IT 1333-74-0, Hydrogen, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(exptl. and theor. studies of hydrogenated amorphous semiconductor alloys and superlattices)

IT 7440-21-3, Silicon, properties
RL: PRP (Properties)
(exptl. and theor. studies of hydrogenated amorphous semiconductor alloys and superlattices)

L5 ANSWER 15 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:586292 CAPLUS
DN 119:186292
ED Entered STN: 30 Oct 1993
TI Low-symmetry metastable phases formed during ***crystallization*** of the metallic glass palladium- ***silicon*** (Pd80Si20)
AU Li, Zongquan; Qin, Yong; He, Yizhen
CS Inst. Solid State Phys., Acad. Sin., Hefei, Peop. Rep. China
SO Physica Status Solidi A: Applied Research (1993), 138(1), 47-57
CODEN: PSSABA; ISSN: 0031-8965
DT Journal
LA English
CC 56-8 (Nonferrous Metals and Alloys)

AB Low-symmetry metastable phases with planar defects of the metallic glass Pd80Si20 are obsd. at the initial stage of crystn. Since the reciprocal points are stretched into rods in the direction perpendicular to the planar defects, when the reciprocal rods intersect the Ewald sphere, electron diffraction patterns with cross- ***grating*** bands will be obtained. Geometrically the indexes of these diffraction spots can be directly obtained from these diffraction patterns. The structure parameters of these low-symmetry phases are analyzed with the aid of high-order Laue zones and Laue spots. The appearance of these metastable phases reveals that the crystn. of the metallic glass Pd80Si20 is a complicated and compn.-dependent process, and the lattice parameters of these metastable phases are affected by the local compn.

ST palladium ***silicon*** glass metastable ***crystn***

IT ***Crystallization***
(of palladium- ***silicon*** ***amorphous*** alloy, low-symmetry metastable phase formation in)

IT Metallic glasses
RL: PRP (Properties)
(palladium alloy, crystn. of, low-symmetry metastable phase formation in)

IT 12778-98-2, Palladium 80, ***silicon*** 20 (atomic)

RL: PRP (Properties)
(***crystn*** . of ***amorphous*** , low-symmetry metastable phase formation in)

L5 ANSWER 16 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:627504 CAPLUS
DN 107:227504
ED Entered STN: 12 Dec 1987
TI Substrate for semiconductor devices and its fabrication method
IN Setsune, Kentaro; Miyauchi, Michihiro; Hirao, Takashi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01L021-20
ICS H01L021-263; H01L027-00
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 62203325	A2	19870908	JP 1986-46541	19860304
PRAI	JP 1986-46541		19860304		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 62203325	ICM	H01L021-20
	ICS	H01L021-263; H01L027-00
	IPCI	H01L0021-20 [ICM,4]; H01L0021-263 [ICS,4]; H01L0027-00 [ICS,4]

AB Claimed is a substrate for a semiconductor device comprising an amorphous base (e.g., quartz) and an amorphous or polycryst. Si film, where part of the film edge is periodically removed to form a ***grating*** . Also, claimed is a fabrication method thereof comprising the steps of: prepg. a Si film on a part of the amorphous film; prepg. the ***grating*** region by periodically removing a part of the Si film; prepg. a capping film on the Si film; and regionally heating the substrate and moving a heated region to crystallize the Si film. The method can prep. high-quality single-crystal Si films, and thus permit the use of amorphous substrate materials.
ST semiconductor device amorphous substrate base; ***silicon*** ***crystn*** semiconductor device substrate
IT Semiconductor devices
(amorphous substrate bases for, ***crystn*** . of ***amorphous*** ***silicon*** for)
IT Ceramic materials and wares
(amorphous, for fabrication of transistors)
IT Heating
(in ***crystn*** . of ***amorphous*** ***silicon*** for semiconductor device substrates)
IT Glass, oxide
RL: USES (Uses)
(semiconductor device substrates from)
IT 14808-60-7, Quartz, uses and miscellaneous
RL: USES (Uses)
(semiconductor device substrates from covering of, with single- ***crystal*** ***silicon***)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(single- ***crystal*** , ***amorphous*** substrates covered with, for semiconductor devices)

L5 ANSWER 17 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:543307 CAPLUS
DN 105:143307
ED Entered STN: 18 Oct 1986
TI ***Amorphous*** ***silicon*** spatial light modulator
IN Ashley, Paul R.
PA USA
SO U. S. Pat. Appl., 8 pp. Avail. NTIS Order No. PAT-APPl-6-812 603.
CODEN: XAXXAV

DT Patent
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 812603	A0	19860523	US 1985-812603	19851223
PRAI	US 1985-812603		19851223		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES

AB An amorphous Si spatial light modulator is described that includes a unique 3-electrode structure used to create a 2-dimensional elec. field distribution in liq. crystal material. This modulator allows for the use of very thin photoconductor layers and a middle electrode in the form of a ***grating*** structure to provide control of the field shape while also providing for high spatial resoln.
ST light modulator ***amorphous*** ***silicon*** thin
IT Optical imaging devices
(electro-, liq.- ***crystal*** , ***amorphous*** ***silicon*** spatial light modulator for)
IT Optical instruments
(modulators, with ***amorphous*** ***silicon*** , contg. 3-electrode structure)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(amorphous, spatial light modulator from, with 3-electrode structure)

L5 ANSWER 18 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:542324 CAPLUS
DN 105:142324
ED Entered STN: 18 Oct 1986
TI The diffraction of light by transient ***gratings*** in ***crystalline*** , ion-implanted, and ***amorphous*** ***silicon***
AU Vaitkus, J.; Jarasiunas, K.; Gaubas, E.; Jonikas, L.; Pranaitis, R.; Subacius, L.
CS Dep. Semicond. Phys., Vilnius V. Kapsukas State Univ., Vilnius, 232054, USSR
SO IEEE Journal of Quantum Electronics (1986), QE-22(8), 1298-1305
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The results of the transient ***grating*** technique applied to single crystals of Si were analyzed by taking into account free carrier absorption and nonlinear recombination. By using different configurations of this technique, the exposure and decay characteristics of ***gratings*** in the vol. or surface of Si of different properties (pure, doped with deep or shallow traps, ion implanted, or amorphous) were investigated. The presence of impurities does not change the dominant mechanism of n modulation by the photogenerated nonequil. carriers. Increased damage of Si leads to a decrease in carrier diffusion (implanted Si) with, in the case of amorphous Si, domination of ***grating*** decay by carrier recombination. The properties of ***gratings*** in high external d.c. or a.c. (microwave) elec. fields enables one to evaluate hot carrier diffusion coeffs.
ST optical diffraction transient ***grating*** silicon
IT Optical diffraction
(by transient ***gratings*** in ***cryst*** . and ion implanted or ***amorphous*** ***silicon***)
IT Electric current carriers
(diffusion coeffs. of, in silicon)
IT Diffraction ***gratings***
(transient, in ***cryst*** . and ion implanted and ***amorphous*** ***silicon***)
IT 7440-21-3, properties
RL: PRP (Properties)
(optical diffraction by transient ***gratings*** in cryst. or ion implanted or hydrogenated amorphous)

IT 7440-42-8, properties 7440-57-5, properties 7723-14-0, properties
12385-13-6, properties
RL: PRP (Properties)
(optical diffraction by transient ***gratings*** in silicon contg.)

L5 ANSWER 19 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1985:531845 CAPLUS
DN 103:131845
ED Entered STN: 19 Oct 1985
TI Laser-induced optical diffraction in ***crystalline*** and
amorphous ***silicon***
AU Vaitkus, J.; Jarasiunas, K.; Gaubas, E.; Tinfavicius, E.; Kulevicius, C.;
Miskinis, J.
CS Vilnius. Gos. Univ., Vilnius, USSR
SO Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya (1985), 49(6), 1173-8
CODEN: IANFAY; ISSN: 0367-6765
DT Journal
LA Russian
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 76
AB Self-diffraction of light on laser-induced optical ***gratings*** was
studied exptl. in pure and B-doped (1015 - 2 .times. 1019 cm-3 concn.)
single-cryst. Si, and the results are discussed in terms of dynamics of
nonequil. charge carriers and of dependence of the light-induced change of
n on dopant concn. By increasing the dopant concn., substantial
rearrangement of the energy spectrum occurs, leading to satn. of the
effect. Self-diffraction with the effectiveness of 0.05-0.15% was obsd.
also in amorphous films of .alpha.-Si:H, .alpha.-Si:H(Al), and
.alpha.-Si:H(Ni,Cr) excited by 10-ns laser pulses at .lambda. = 0.53
.mu.m. The effect was obsd. over the energy d. range 20-40 mJ.
ST laser radiation self diffraction silicon; ***grating*** optical
silicon laser diffraction
IT Laser radiation, chemical and physical effects
(dynamic diffraction ***gratings*** induced by, in pure and
boron-doped ***cryst*** . and ***amorphous*** ***silicon***)
IT Diffraction ***gratings***
(laser-induced, in pure and boron-doped ***cryst*** . and
amorphous ***silicon***)
IT Optical nonlinear property
(self-diffraction, in pure and boron-doped ***cryst*** . and
amorphous ***silicon***)
IT Electric current carriers
(nonequil., in pure and boron-doped ***cryst*** . and
amorphous ***silicon*** , self-diffraction of laser
radiation in relation to)
IT Optical diffraction
(self-, of laser radiation in pure and boron-doped ***cryst*** . and
amorphous ***silicon***)
IT 7440-21-3, properties
RL: PRP (Properties)
(laser-induced optical diffraction in pure and boron-doped)
IT 1333-74-0, properties
RL: PRP (Properties)
(self-diffraction of laser radiation in ***amorphous***
silicon contg.)
IT 7429-90-5, properties 7440-02-0, properties 7440-47-3, properties
RL: PRP (Properties)
(self-diffraction of laser radiation in hydrogenated ***amorphous***
silicon contg.)
IT 7440-42-8, properties
RL: PRP (Properties)
(self-diffraction of laser radiation in silicon contg.)

L5 ANSWER 20 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:82125 CAPLUS
DN 98:82125
ED Entered STN: 12 May 1984
TI Flash-lamp-induced ***crystal*** growth of ***silicon*** on
amorphous substrates using artificial surface-relief structures
AU Scharff, W.; Erben, J. W.; Wolf, A.; Breuer, K.; Weissmantel, C.; Klabes,
R.; Woittennek, H.; Heinig, K. H.; Voelskov, M.; et al.

CS Sekt. Phys./Elektron. Bauelemente, Tech. Hochsch. Karl-Marx-Stadt, Karl-Marx-Stadt, DDR-9010, Ger. Dem. Rep.
SO Physica Status Solidi A: Applied Research (1982), 74(2), 545-52
CODEN: PSSABA; ISSN: 0031-8965
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
AB Crystn. of amorphous Si films deposited over surface-relief structures etched into SiO2 layers is achieved by large-area processing with incoherent light pulses of 10 ms duration. The structures are either ***gratings*** with a const. top width of 3 .mu.m and bottoms with a width between 3 and 20 .mu.m or otherwise shaped artificial surface-relief micropatterns. The cryst. films consisted of very large crystallites, which are either sepd. from each other by grain boundaries or twinned to one another.
ST ***crystn*** ***amorphous*** ***silicon*** light
IT Flash lamps
Light, chemical and physical effects
(***crystn*** . by, of ***amorphous*** ***silicon*** films)
IT Semiconductor materials, ***amorphous***
(***silicon*** films, flash-lamp-induced ***crystal*** growth of)
IT 7440-21-3, properties
RL: PRP (Properties)
(crystn. of amorphous films of, flash-lamp-induced)
IT 7631-86-9, uses and miscellaneous
RL: USES (Uses)
(***crystn*** . of ***amorphous*** ***silicon*** films on, flash-lamp-induced)

L5 ANSWER 21 OF 36 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1979:515446 CAPLUS
DN 91:115446
ED Entered STN: 12 May 1984
TI ***Crystallographic*** orientation of ***silicon*** on an ***amorphous*** substrate using an artificial surface-relief ***grating*** and laser crystallization
AU Geis, M. W.; Flanders, D. C.; Smith, Henry I.
CS Lincoln Lab., Massachusetts Inst. Technol., Lexington, MA, 02173, USA
SO Applied Physics Letters (1979), 35(1), 71-4
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 75-1 (Crystallization and Crystal Structure)
AB Uniform crystallog. orientation of Si films, 500 nm thick, was achieved on amorphous fused-SiO2 substrates by laser crystn. of amorphous Si deposited over surface-relief ***gratings*** etched into the substrates. The ***gratings*** had a square-wave cross section with a 3.8-.mu.m spatial period and a 100-mm depth. The .ltbbrac.100.rtbbrac. directions in the Si were parallel to the ***grating*** and perpendicular to the substrate plane. Orientation of overlayer films induced by artificial surface patterns should be called graphoepitaxy.
ST graphoepitaxy silicon laser; ***grating*** artificial silicon epitaxy
IT Nomenclature, new concepts
(graphoepitaxy)
IT Laser radiation, chemical and physical effects
(graphoepitaxy of silicon by)
IT Epitaxy
(grapho-, of ***silicon*** on ***amorphous*** substrates)
IT 7440-21-3, properties
RL: PRP (Properties)
(orientation of epitaxial films of, on amorphous substrates, by artificial surface-relief ***grating*** and laser radiation)

L5 ANSWER 22 OF 36 INSPEC (C) 2006 IEE on STN
AN 2005:8683626 INSPEC
TI Microstructure of femtosecond laser-induced ***grating*** in ***amorphous*** ***silicon*** .
AU Geon Joon Lee; Jisun Park; Eun Kyu Kim; YoungPak Lee (Dept. of Phys., Hanyang Univ., Seoul, South Korea); Kyung Moon Kim; Hyeonsik Cheong; Chong Seung Yoon; Yong-Duck Son; Jin Jang

SO Optics Express (5 Sept. 2005) vol.13, no.18. 21 refs.
Collection URL: http://www.opticsexpress.org/
Published by: Opt. Soc. America
Price: CCCC 1094-4087/2005/$15.00
CODEN: OPEXFF ISSN: 1094-4087
DT Journal
TC Experimental
CY United States
LA English
AB The femtosecond laser-induced ***grating*** (FLIG) formation and ***crystallization*** were investigated in ***amorphous*** ***silicon*** (a-Si) films, prepared on glass by plasma-enhanced chemical-vapor deposition. Probe-beam diffraction, micro-Raman spectroscopy, atomic force microscopy, scanning electron microscopy, and transmission electron microscopy were employed to characterize the diffraction properties and the microstructures of FLIGs. It was found that i) the FLIG can be regarded as a pattern of alternating a-Si and microcrystalline-silicon (mu·c-Si) lines with a period of about 2 mu m, and ii) efficient ***grating*** formation and crystallization were achieved by high-intensity recording with a short writing period.
CC A4280F Gratings, echelles; A4280W Ultrafast optical techniques; A4280X Optical coatings; A0779 Scanning probe microscopy and related techniques; A0780 Electron and ion microscopes and techniques; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; A7830G Infrared and Raman spectra in inorganic crystals; A8115H Chemical vapour deposition; A4262A Laser materials processing; A4285D Optical fabrication, surface grinding; B4360B Laser materials processing; B4190 Other optical system components; B4330B Laser beam modulation, pulsing and switching; mode locking and tuning
CT ATOMIC FORCE MICROSCOPY; CRYSTAL MICROSTRUCTURE; CRYSTALLISATION; DIFFRACTION ***GRATINGS*** ; HIGH-SPEED OPTICAL TECHNIQUES; LASER MATERIALS PROCESSING; OPTICAL FABRICATION; OPTICAL FILMS; PLASMA CVD COATINGS; SCANNING ELECTRON MICROSCOPY; SILICON; TRANSMISSION ELECTRON MICROSCOPY
ST ***femtosecond laser-induced grating microstructure*** ; ***amorphous*** *** silicon film*** ; crystallization; plasma-enhanced chemical-vapor deposition; probe-beam diffraction; microRaman spectroscopy; atomic force microscopy; scanning electron microscopy; transmission electron microscopy; microcrystalline-silicon; ***grating formation*** ; high-intensity recording; Si
CHI Si el
ET Si

L5 ANSWER 23 OF 36 INSPEC (C) 2006 IEE on STN
AN 2001:7065241 INSPEC DN A2001-22-4240-004; B2001-11-4350-018
TI Reversible recording of interference ***gratings*** with a diffraction efficiency above 50% in an ***amorphous*** hydrogenized ***silicon*** -nematic liquid ***crystal*** structure.
AU Ivanova, N.L.; Onokhov, A.P.; Chaika, A.N. (Vavilov Opt. Inst., State Sci. Center of the Russian Federation, St. Petersburg, Russia)
SO Technical Physics Letters (Aug. 2001) vol.27, no.8, p.647-8. 8 refs.
Published by: MAIK Nauka
Price: CCCC 1063-7850/2001/2708-0647$21.00
CODEN: TPLEED ISSN: 1063-7850
SICI (Trl): 1063-7850(200108)27:8L.647:RRIG;1-S
Translation of: Pis'ma v Zhurnal Tekhnicheskoi Fizika. 8 refs.
CODEN: PZTFDD ISSN: 0320-0116
DT Journal; Translation Abstracted
TC Experimental
CY Russian Federation; Russian Federation
LA English
AB The properties of a space-time light modulator comprising an a-Si:H based p-i-n diode and a nematic liquid crystal layer were studied using a holographic technique. Under certain conditions, an asymmetry of the diffraction efficiency in the +1 and -1 diffraction orders was observed. The maximum diffraction efficiency in one of these orders may reach up to 52%, which is a record value for devices of this type.
CC A4240H Holographic recording; A4240E Holographic optical elements; holographic gratings; A4280K Optical beam modulators; B4350 Holography; B4150D Liquid crystal devices; B4250 Photoelectric devices
CT AMORPHOUS SEMICONDUCTORS; ELEMENTAL SEMICONDUCTORS; HOLOGRAPHIC ***GRATINGS*** ; HYDROGEN; NEMATIC LIQUID CRYSTALS; P-I-N PHOTODIODES;

RECORDING; SILICON; SPATIAL LIGHT MODULATORS
ST reversible recording; ***interference gratings*** ; diffraction efficiency; ***amorphous hydrogenized silicon-nematic liquid crystal*** *** structure*** ; space-time light modulator; a-Si:H based p-i-n diode; nematic liquid crystal layer; holographic technique; asymmetry; Si:H
CHI Si:H int, Si int, H int, Si:H bin, Si bin, H bin, Si el, H el, H dop
ET H*Si; Si:H; H doping; doped materials; Si

L5 ANSWER 24 OF 36 INSPEC (C) 2006 IEE on STN
AN 1998:5883506 INSPEC DN A9810-8110J-001; B9805-0510-022
TI Optical and structural characterization of ***silicon*** microstructures fabricated by laser interference ***crystallization*** .
AU Toet, D.; Aichmayr, G.; Mulato, M.; Santos, P.V.; Spangenberg, A.; Bergmann, R.B. (Max-Planck-Inst. fur Festkorperforschung, Stuttgart, Germany)
SO Amorphous and Microcrystalline Silicon Technology - 1997 Symposium Editor(s): Wagner, S.; Hack, M.; Schiff, E.A.; Schropp, R.; Shimizu, I. Pittsburgh, PA, USA: Mater. Res. Soc, 1997. p.337-42 of xx+978 pp. 11 refs.
Conference: San Francisco, CA, USA, 31 March-4 April 1997
ISBN: 1-55899-371-1
DT Conference Article
TC Experimental
CY United States
LA English
AB Uniform ***gratings*** of sharply defined polycrystalline silicon lines with micrometer-sized periods were created by laser interference ***crystallization*** of ***amorphous*** ***silicon*** . Atomic force microscopy (AFM) reveals that lines fabricated with high pulse energies (380 mJ/cm2) contain large grains (dimensions up to 1.5 mu m), growing in a direction perpendicular to the lines. We assign this strong lateral growth to the melting of the material in the center of the lines combined with the presence of small grains, which act as nuclei, at the interfaces with the amorphous regions. Spatially resolved Raman spectroscopy shows that size effects dominate the Raman line shape at the edge of the line, confirming the AFM results, while stress increases towards the center of the line. The spectra measured in the middle of lines created with high energies show doping effects caused by the diffusion of boron atoms from the substrate upon exposure.
CC A8110J Growth from solid phases; A6470K Solid-solid transitions; A6150C Physics of crystal growth; A6180B Ultraviolet, visible and infrared radiation effects; A6820 Solid surface structure; A7830G Infrared and Raman spectra in inorganic crystals; A6480G Microstructure; B0510 Crystal growth; B2520C Elemental semiconductors; B2520F Amorphous and glassy semiconductors
CT AMORPHOUS SEMICONDUCTORS; ATOMIC FORCE MICROSCOPY; BORON; CRYSTALLISATION; DIFFUSION; ELEMENTAL SEMICONDUCTORS; GRAIN SIZE; INTERNAL STRESSES; LASER BEAM EFFECTS; RAMAN SPECTRA; SEMICONDUCTOR GROWTH; SILICON; SPECTRAL LINE BREADTH
ST optical characterization; structural characterization; silicon microstructures; laser interference crystallization; ***uniform*** *** gratings*** ; sharply defined polycrystalline silicon lines; micrometer-sized periods; ***amorphous silicon*** ; atomic force microscopy; AFM; high pulse energies; large grains; lateral growth; melting; spatially resolved Raman spectroscopy; size effects; Raman line shape; stress; doping effects; diffusion; boron atoms; 1.5 mum; Si:B
CHI Si:B bin, Si bin, B bin, Si el, B el, B dop
PHP size 1.5E-06 m
ET B*Si; Si:B; B doping; doped materials; Si

L5 ANSWER 25 OF 36 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 1996:5397270 INSPEC DN A9622-8160C-038; B9611-2550E-107
TI Extended resolution for lateral structuring with laser interference ***gratings*** using high-index input coupling.
AU Kelly, M.K.; Dahlheimer, B. (Walter Schottky Inst., Tech. Univ. Munchen, Garching, Germany)
SO Physica Status Solidi A (16 Aug. 1996) vol.156, no.2, p.K13-16. 7 refs.
Published by: Akademie Verlag
Price: CCCC 0031-8965/96/$3.50+0.25
CODEN: PSSABA ISSN: 0031-8965
SICI: 0031-8965(19960816)156:2L.k13:ERLS;1-G

DT Journal
TC Experimental; Theoretical
CY Germany, Federal Republic of
LA English
AB The usefulness of laterally structuring semiconductors directly with the thermal ***grating*** induced by a high-energy pulsed-laser interference pattern has recently been demonstrated for the diverse cases of ***crystallization*** in ***amorphous*** ***silicon*** films band-level modulation in MBE-grown quantum wells, and patterned etching of chemically inert GaN. For the simplest geometry, two plane-wave beams intersect at the substrate producing an intensity pattern of parallel lines with period determined by the wavelength and the angle between the beams. When this angle is maximized, for opposing beam directions, the minimum period of half-wavelength is obtained. Here we discuss the use of a modified geometry that permits extension of this resolution by coupling the light into the substrate through a medium with refractive index higher than one, effectively reducing the wavelength of the incident light. By this technique a period of 125 nm has been achieved using the 355 nm third harmonic from a Nd:YAG laser.
CC A8160C Surface treatment and degradation of semiconductors; A6180B Ultraviolet, visible and infrared radiation effects; A6820 Solid surface structure; A7920D Laser-surface impact phenomena; A4280F Gratings, echelles; A7865J Optical properties of nonmetallic thin films; A7820D Optical constants and parameters; B2550E Surface treatment for semiconductor devices; B2520D II-VI and III-V semiconductors
CT ATOMIC FORCE MICROSCOPY; DIFFRACTION ***GRATINGS*** ; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; INTERFACE PHENOMENA; LASER BEAM EFFECTS; LIGHT INTERFERENCE; REFLECTIVITY; REFRACTIVE INDEX; SURFACE STRUCTURE; SURFACE TREATMENT
ST lateral structuring; semiconductor surface treatment; ***laser*** *** interference gratings*** ; high index input coupling; intensity pattern; modified geometry; refractive index; Nd:YAG laser; 125 nm; 355 nm; GaAs
CHI GaAs sur, As sur, Ga sur, GaAs bin, As bin, Ga bin
PHP size 1.25E-07 m; wavelength 3.55E-07 m
ET Ga*N; GaN; Ga cp; cp; N cp; Nd; V; As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; As cp; As; Ga

L5 ANSWER 26 OF 36 INSPEC (C) 2006 IEE on STN
AN 1996:5156701 INSPEC DN A9604-4240-001; B9602-4350-073
TI Reversible recording of holograms on hydrogenated ***amorphous*** ***silicon*** /liquid ***crystal*** structures.
AU Chaika, A.N.; Ivanova, N.L.; Onokhov, A.P.; Nefed'eva, E.A. (S.I. Vavilov State Opt. Inst., All-Russia Sci. Center, St. Petersburg, Russia)
SO Technical Physics Letters (Oct. 1995) vol.21, no.10, p.808-9. 3 refs.
Published by: AIP
Price: CCCC 1063-7850/95/100808-02$10.00
CODEN: TPLEED ISSN: 1063-7850
SICI (Trl): 1063-7850(199510)21:10L.808:RRHH;1-K
Translation of: Pis'ma v Zhurnal Tekhnicheskoi Fizika (Oct. 1995) vol.21, no.19-20, p.83-7. 3 refs.
CODEN: PZTFDD ISSN: 0320-0108
SICI: 0320-0108(199510)21:19/20L.83;1-X
DT Journal; Translation Abstracted
TC Experimental
CY Russian Federation; United States
LA English
AB Structures of the photosemiconductor/liquid crystal (PS/LC) type, which have a high sensitivity and spatial resolution at relatively low excitation voltages have found wide use in developing optically addressed space-time light modulators for devices used in optical processing of information. Among a large number of such structures, of particular importance are layers based on hydrogenated ***amorphous*** ***silicon*** in conjunction with liquid ***crystals*** (a-Si:H-LC structures), which are very fast while retaining the requisite level of the other parameters. The main function of modulators based on this type of structure is to input images into coherent optical processors in real time. The development of the architecture of modern processors and optical neuron networks has brought to the fore the problem of creating fast modulators to permit reversible holographic recording of information. Optimization of the structure parameters with a photosensitive layer of a-Si:H has allowed us to achieve the required spatial resolution and write and read out holograms in real time. The space-time light modulators that

we used were multilayer sandwich structures between two glass substrates.
CC A4240H Holographic recording; A4280K Optical beam modulators; A4240E Holographic optical elements; holographic gratings; A4280F Gratings, echelles; A4240F Image characteristics in holography; B4350 Holography; B4150D Liquid crystal devices
CT AMORPHOUS SEMICONDUCTORS; ELECTRO-OPTICAL MODULATION; ELEMENTAL SEMICONDUCTORS; HOLOGRAPHIC ***GRATINGS*** ; HOLOGRAPHY; HYDROGEN; LIQUID CRYSTAL DEVICES; SILICON; SPATIAL LIGHT MODULATORS
ST holograms; reversible recording; photosemiconductor/liquid crystal type crystals; sensitivity; spatial resolution; optically addressed space-time light modulators; optical processing; a-Si:H-liquid crystal structures; images; coherent optical processors; optical neuron networks; structure parameters; photosensitive layer; read out holograms; space-time light modulators; multilayer sandwich structures; write holograms; Si:H
CHI Si:H bin, Si bin, H bin, Si el, H el, H dop; Si int, H int, Si ss, H ss, H bin, Si el, H dop
ET H*Si; Si:H; H doping; doped materials; Si

L5 ANSWER 27 OF 36 INSPEC (C) 2006 IEE on STN
AN 1993:4376076 INSPEC DN A9309-8630J-012; B9305-8420-015
TI ***Amorphous*** ***silicon*** /polycrystalline Si tandem type solar cells.
AU Takakura, H. (Dept. of Electron. & Inf., Toyama Prefectural Univ., Japan); Ma, W.; Okamoto, H.; Hamakawa, Y.
SO Oyo Buturi (Oct. 1992) vol.61, no.10, p.1026-30. 22 refs.
CODEN: OYBSA9 ISSN: 0369-8009
DT Journal
TC Theoretical
CY Japan
LA Japanese
AB The theoretical conversion efficiency of tandem-type solar cells is reviewed. Among various material combinations of tandem-type solar cells, that of ***amorphous*** ***silicon*** and ***crystalline*** ***silicon*** is recognized to be one of the best combinations from the viewpoints of high theoretical efficiency and ease of material preparation and device processing. The present status of this type of solar cell is introduced and future prospects are discussed.
CC A8630J Photoelectric conversion; solar cells and arrays; A8115H Chemical vapour deposition; B8420 Solar cells and arrays; B0520F Vapour deposition
CT AMORPHOUS SEMICONDUCTORS; ELEMENTAL SEMICONDUCTORS; SILICON; SOLAR CELLS
ST a-Si/polycrystalline Si; semiconductor; ECR-CVD; ***optical coupler*** ; conversion efficiency; tandem-type solar cells; material combinations; material preparation; device processing; Si
CHI Si int, Si el
ET Si

L5 ANSWER 28 OF 36 INSPEC (C) 2006 IEE on STN
AN 1987:2958029 INSPEC DN A87110543
TI Molybdenum-silicon multilayer monochromator for the extreme ultraviolet.
AU Barbee, T.W., Jr. (Lawrence Livermore Nat. Lab., CA, USA); Pianetta, P.; Redaelli, R.; Tatchyn, R.; Barbee, T.W., III
SO Applied Physics Letters (22 June 1987) vol.50, no.25, p.1841-3. 18 refs.
Price: CCCC 0003-6951/87/251841-03$01.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB A two-element molybdenum-silicon multilayer monochromator has been tested in the energy range 60-110 eV on a differentially pumped bending magnet beamline having a high-energy cutoff of 3.5 keV at the Stanford Synchrotron Radiation Laboratory. The multilayer structures were sputter deposited onto 5-cm-diam (111) single- ***crystal*** ***silicon*** and contained 20 molybdenum layers (4.93 nm thick) separated by ***amorphous*** ***silicon*** layers (7.8 nm thick). A 1200 1/mm gold transmission ***grating*** was used to independently measure the wavelength passed by the monochromator. The Al L2,3 absorption edge jump was also measured using the monochromator. These experimental results are compared to model calculations for both the synchrotron source-monochromator and the synchrotron source-monochromator-Al filter configurations and excellent agreement is shown.
CC A4280D Monochromators

CT ELEMENTAL SEMICONDUCTORS; MOLYBDENUM; MONOCHROMATORS; SILICON
ST semiconductor; extreme ultraviolet; sputter deposited; model calculations; Mo-Si multilayer monochromator; ***Au transmission grating***
CHI Mo-Si int, Mo int, Si int, Mo el, Si el; Au el
ET Al; Mo*Si; Mo sy 2; sy 2; Si sy 2; Mo-Si; Au; Mo; Si

L5 ANSWER 29 OF 36 INSPEC (C) 2006 IEE on STN
AN 1987:2793648 INSPEC DN A87011034
TI The diffraction of light by transient ***gratings*** in ***crystalline*** , ion-implanted, and ***amorphous*** ***silicon*** .
AU Vaitkus, J.; Harasiunas, K.; Gaubas, E.; Jonikas, L.; Pranaitis, R. (Dept. of Semicond. Phys., Vilnius V. Kapsukas State Univ., Lithuanian SSR, USSR); Subacius, L.
SO IEEE Journal of Quantum Electronics (Aug. 1986) vol.QE-22, no.8, p.1298-305. 28 refs.
Price: CCCC 0018-9197/86/0800-1298$01.00
CODEN: IEJQA7 ISSN: 0018-9197
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB The results of applying the transient ***grating*** technique to single ***crystals*** of ***silicon*** are analyzed, taking into account free-carrier absorption and nonlinear recombination. Using different configurations of this technique, the exposure and decay characteristics of ***gratings*** in the volume or surface of silicon of different properties (pure, doped with deep or shallow traps, ion implanted, or amorphous) are investigated. The presence of impurities does not change the dominant mechanism of refractive index modulation by the photogenerated nonequilibrium carriers. Increase damage of Si leads to a decrease in carrier diffusion (implanted Si) with, in the case of amorphous Si, domination of ***grating*** decay by carrier recombination. The properties of ***gratings*** in high external DC or AC (microwave) electric fields allows the evaluation of hot-carrier diffusion coefficients.
CC A4265 Nonlinear optics; A4280F Gratings, echelles; A7220J Charge carriers: generation, recombination, lifetime, and trapping
CT AMORPHOUS SEMICONDUCTORS; DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; LIGHT DIFFRACTION; NONLINEAR OPTICS; SILICON
ST crystalline Si; microwave electric fields; ion-implanted Si; semiconductor; deep traps; ***transient grating*** ; single crystals; free-carrier absorption; nonlinear recombination; decay characteristics; shallow traps; refractive index modulation; photogenerated nonequilibrium carriers; implanted Si; amorphous Si; hot-carrier diffusion coefficients
ET Si

L5 ANSWER 30 OF 36 INSPEC (C) 2006 IEE on STN
AN 1986:2760589 INSPEC DN A86121627
TI Light-induced light diffraction in ***crystalline*** and ***amorphous*** ***silicon*** .
AU Vaitkus, Yu.; Yarashyunas, K.; Gaubas, E.; Tinfavichyus, E.; Kulevichyus, Ch.; Mishkinis, Yu. (V. Kapsukas Vilnius State Univ., Lithuanian SSR, USSR)
SO Bulletin of the Academy of Sciences of the USSR, Physical Series (1985) vol.49, no.6, p.126-31. 20 refs.
Price: CCCC 0001-432X/85/$20.00
CODEN: BUPSAA ISSN: 0001-432X
Translation of: Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya (1985) vol.49, no.6, p.1173-8. 20 refs.
CODEN: IANFAY ISSN: 0367-6765
Conference: Proceedings of the Sixth All-Union Conference on the Nonresonant Interaction of Optical Radiation with Matter. Palanga, USSR, 18-22 Sept 1984
DT Conference Article; Journal; Translation Abstracted
TC Experimental
CY USSR; United States
LA English
AB Interest in light-induced ***gratings*** is due to their widespread use in adaptive and nonlinear optics. Silicon can serve as a model medium for determining various physical processes in the light-induced ***gratings*** method, while analysis of the ***grating*** recording

and reading conditions, and measurement of the nonequilibrium charge carrier concentration (NCC) parameters and of the Delta n modulation mechanisms reveal the possibilities of the dynamic ***gratings*** procedure generally.
CC A4260H Laser beam characteristics and interactions; A4265 Nonlinear optics; A4280F Gratings, echelles
CT AMORPHOUS SEMICONDUCTORS; CARRIER DENSITY; DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; LASER BEAM EFFECTS; NONLINEAR OPTICS; SILICON
ST crystalline Si; ***grating reading*** ; elemental semiconductor; adaptive optics; light induced light diffraction; nonlinear optics; physical processes; ***light-induced gratings method*** ; ***grating*** *** recording*** ; nonequilibrium charge carrier concentration; modulation mechanisms; ***dynamic gratings procedure***
ET Si

L5 ANSWER 31 OF 36 INSPEC (C) 2006 IEE on STN
AN 1984:2283150 INSPEC DN A84080452
TI Epitaxial ***crystallization*** of ***silicon*** films deposited on GaP substrates during laser interference annealing.
AU Koval'chuk, Yu.V.; Portnoi, E.L.; Skopina, V.I.; Smirnitskii, V.B.; Smol'skii, O.V.; Sokolov, I.A. (A.F. Ioffe Physicotech. Inst., Acad. of Sci., Leningrad, USSR)
SO Soviet Technical Physics Letters (July 1983) vol.9, no.7, p.365-6. 5 refs.
Price: CCCC 0360-120X/83/070365-02$02.60
CODEN: STPLD2 ISSN: 0360-120X
Translation of: Pis'ma v Zhurnal Tekhnicheskoi Fizika (July 1983) vol.9, no.13-14, p.850-3. 5 refs.
CODEN: PZTFDD ISSN: 0320-0108
DT Journal; Translation Abstracted
TC Experimental
CY USSR; United States
LA English
AB The authors report a continuation of a study of the epitaxial crystallization of deposited amorphous films of semiconductor materials subjected to laser pulses under conditions of interference annealing. In contrast with the previous paper (see ibid., vol.8, p.201, 1982), where the occurrence of crystallization was monitored on the basis of the diffraction efficiency of the resulting ***gratings*** , in the present experiments they studied the shape of the lines of the ***grating*** for various bombardment conditions. Laser beams bombarded ***amorphous*** ***silicon*** films deposited on single- ***crystal*** GaP substrates oriented in the (111) and the (100) planes. The deposition was carried out by ion-plasma sputtering of a single- ***crystal*** ***silicon*** target in an argon atmosphere on a planar DC magnetron. For the annealing they used a ruby laser (lambda =0.69 mu m) in Q-switched operation (tau pulse=50 ns) with an approximately Gaussian spatial distribution of radiant energy.
CC A6180B Ultraviolet, visible and infrared radiation; A6855 Thin film growth, structure, and epitaxy; A6860 Physical properties of thin films, nonelectronic; A8115C Deposition by sputtering
CT AMORPHOUS SEMICONDUCTORS; CRYSTALLISATION; ELEMENTAL SEMICONDUCTORS; GALLIUM COMPOUNDS; III-V SEMICONDUCTORS; LASER BEAM ANNEALING; SEMICONDUCTOR EPITAXIAL LAYERS; SILICON; SPUTTERED COATINGS; SUBSTRATES
ST Si; GaP substrates; laser interference annealing; epitaxial crystallization; amorphous films; semiconductor; laser pulses; ***gratings*** ; single-crystal; ion-plasma sputtering; planar DC magnetron; ruby laser; Q-switched operation; Gaussian spatial distribution; radiant energy
ET Ga*P; GaP; Ga cp; cp; P cp; V; Si

L5 ANSWER 32 OF 36 INSPEC (C) 2006 IEE on STN
AN 1984:2204193 INSPEC DN B84013366
TI Graphoepitaxy.
AU Furukawa, S. (Tokyo Inst. of Technol., Yokohama-shi, Japan)
SO Journal of the Institute of Electronics and Communication Engineers of Japan (May 1983) vol.66, no.5, p.486-9. 10 refs.
CODEN: IECJAJ ISSN: 0373-6121
DT Journal
TC Practical
CY Japan
LA Japanese
AB The need for silicon on insulation structures is put down to energy

consumption, speed and VLSI considerations. The construction of circuits on noncrystal bases with relief is reviewed. ***Crystallographic*** orientation of ***silicon*** on an ***amorphous*** substrate using an artificial relief ***grating*** and laser crystallisation is described. Future developments are expected in large single chip collision over SiO2 by lateral epitaxy, seeded solidification and zone melting and recrystallisation of the encapsulated Si film. The electrical properties of the product are briefly reviewed.
CC B0510D Epitaxial growth; B2550 Semiconductor device technology; B2570 Semiconductor integrated circuits
CT INTEGRATED CIRCUIT TECHNOLOGY; LARGE SCALE INTEGRATION; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH
ST IC manufacture; graphoepitaxy; energy consumption; speed; VLSI; noncrystal bases; relief; amorphous substrate; ***artificial relief grating*** ; laser crystallisation; SiO2; lateral epitaxy; seeded solidification; zone melting; recrystallisation; encapsulated Si film
ET O*Si; SiO2; Si cp; cp; O cp; Si

L5 ANSWER 33 OF 36 INSPEC (C) 2006 IEE on STN
AN 1983:2016226 INSPEC DN A83033602; B83017379
TI Flash-lamp-induced ***crystal*** growth of ***silicon*** on ***amorphous*** substrates using artificial surface-relief structures.
AU Scharff, W.; Erben, J.W.; Wolf, A.; Breuer, K.; Weissmantel, C. (Sektion Phys./Elektronische Bauelemente, Tech. Hochschule, Karl-Marx-Stadt, East Germany); Klabes, R.; Woittennek, H.; Heinig, K.H.; Voelskov, M.; Matthai, J.; Schmidt, A.
SO Physica Status Solidi A (16 Dec. 1982) vol.74, no.2, p.545-52. 9 refs.
CODEN: PSSABA ISSN: 0031-8965
DT Journal
TC Experimental
CY German Democratic Republic
LA English
AB ***Crystallization*** of ***amorphous*** ***silicon*** films deposited over surface-relief structures etched into SiO2 layers is achieved by large area processing with incoherent light pulses of 10 ms duration. The structures are either ***gratings*** with a constant top width of 3 mu m and bottoms with a width between 3 and 20 mu m or otherwise shaped artificial surface-relief micropatterns. The crystalline films are found to consist of very large crystallites, which are either separated from each other by grain boundaries or twinned to one another.
CC A6180 Radiation damage and other irradiation effects; A6855 Thin film growth, structure, and epitaxy; B0520 Thin film growth; B2520C Elemental semiconductors; B2520F Amorphous and glassy semiconductors
CT AMORPHOUS SEMICONDUCTORS; CRYSTALLISATION; CRYSTALLITES; ELEMENTAL SEMICONDUCTORS; RADIATION EFFECTS; SEMICONDUCTOR THIN FILMS; SILICON
ST amorphous Si films; flash lamp induced crystal growth; etched SiO2; semiconductor; surface-relief structures; SiO2 layers; incoherent light pulses; ***gratings*** ; shaped artificial surface-relief micropatterns; crystallites; grain boundaries; twinned
ET O*Si; SiO2; Si cp; cp; O cp; Si

L5 ANSWER 34 OF 36 INSPEC (C) 2006 IEE on STN
AN 1981:1757155 INSPEC DN A81096955; B81045092
TI Silicon graphoepitaxy.
AU Geis, M.W.; Antoniadis, D.A.; Silversmith, D.J.; Mountain, R.W.; Smith, H.I. (Lincoln Lab., MIT, Lexington, MA, USA)
SO Journal of Vacuum Science and Technology (March 1981) vol.18, no.2, p.229-30. 5 refs.
CODEN: JVSTAL ISSN: 0022-5355
Conference: Proceedings of the 27th National Symposium of the American Vacuum Society. Detroit, MI, USA, 13-17 Oct 1980
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB Summary form only is given. Recently the authors reported on the use of a strip-heater oven to achieve graphoepitaxy of ***silicon*** films over relief ***gratings*** in ***amorphous*** SiO2. Here they briefly review the strip-heater oven technique and compare the ***crystallographic*** and electrical properties of the ***silicon*** films obtained with the properties of films obtained by laser crystallization over relief ***gratings*** . The strip-heater oven,

consists of two carbon strips 50*75*1.2 mm that are resistively heated by passing 200-350 A through them. The sample, which is placed on the lower strip heater, consists of a substrate with a deposited film of silicon and a deposited film or 'cap' of SiO2. (This cap was found to be necessary in order to achieve graphoepitaxy.) The substrate is either fused silica or thermally grown SiO2 (usually approximately 1 mu m thick) on a silicon wafer. A relief ***grating*** of square-wave cross section is etched 100 nm deep into the SiO2. The ***grating*** periods used to date have been in the range 1-4 mu m. The sample is heated on the lower strip to 1100 degrees -1300 degrees C, after which additional radiational heating by the upper strip causes a ***crystallization*** transition to occur in the ***silicon*** . After this transition, the mean (100) crystallographic directions are perpendicular to the substrate and parallel to the ***grating*** axis. The entire crystallization process requires about 40-60 s. The graphoepitaxial silicon films produced either by a strip-heater oven or laser crystallization are mosaics with crystallites having a range of orientations relative to the substrate normal and the ***grating*** axis.

CC A6855 Thin film growth, structure, and epitaxy; A7280C Elemental semiconductors; A7360F Semiconductor films; B0510D Epitaxial growth; B2520C Elemental semiconductors

CT ELECTRONIC CONDUCTION IN CRYSTALLINE SEMICONDUCTOR THIN FILMS; ELEMENTAL SEMICONDUCTORS; EPITAXIAL GROWTH; SEMICONDUCTOR GROWTH; SILICON

ST graphoepitaxy; strip-heater oven; ***relief gratings*** ; amorphous SiO2; electrical properties; crystallization transition; Si; electrical characterisation; semiconductor; crystallographic properties

ET O*Si; SiO2; Si cp; cp; O cp; C; Si

L5 ANSWER 35 OF 36 INSPEC (C) 2006 IEE on STN

AN 1980:1543057 INSPEC DN A80070554; B80034753

TI Grapho-epitaxy of silicon on fused silica using surface micropatterns and laser crystallization.

AU Geis, M.W.; Flanders, D.C.; Smith, H.I. (Lincoln Lab., MIT, Lexington, MA, USA); Antoniadis, D.A.

SO Journal of Vacuum Science and Technology (Nov.-Dec. 1979) vol.16, no.6, p.1640-3. 12 refs.
CODEN: JVSTAL ISSN: 0022-5355
Conference: Proceedings of the 15th Symposium on Electron, Ion, and Photon Beam Technology. Boston, MA, USA, 29 May-1 June 1979

DT Conference Article; Journal

TC Experimental

CY United States

LA English

AB Uniform ***crystallographic*** orientation of ***silicon*** films, 0.5 mu m thick, has been achieved on amorphous fused silica substrates by laser ***crystallization*** of ***amorphous*** ***silicon*** deposited over surface-relief ***gratings*** etched into the substrates by reactive ion etching. The ***gratings*** had a square-wave cross section with a 3.8 mu m spatial period, a 100-nm depth and corner radii of about 5 nm. The (100) directions in the silicon were parallel to the ***grating*** to within +or-15 degrees , and perpendicular to the substrate plane to within +or-2.5 degrees . A simple model for the graphoepitaxy process is presented. Sheet resistivity of phosphorus doped graphoepitaxial silicon was 2.5 times larger than that of bulk silicon of the same doping. Graphoepitaxy is a new application of microstructure fabrication that may lead to new combinations of substrates and overlayer films, and perhaps to three-dimensionally integrated electronic devices and other novel configurations.

CC A6855 Thin film growth, structure, and epitaxy; A7920D Laser-light impact phenomena; A8110J Growth from solid phases; A8115 Methods of thin film deposition; A8140G Other heat and thermomechanical treatments; A8140R Electrical and magnetic properties (related to treatment conditions); B0510D Epitaxial growth; B2520C Elemental semiconductors; B2550 Semiconductor device technology; B4360 Laser applications

CT ANNEALING; CRYSTALLISATION; ELECTRONIC CONDUCTION IN CRYSTALLINE SEMICONDUCTOR THIN FILMS; ELEMENTAL SEMICONDUCTORS; EPITAXIAL GROWTH; LASER BEAM EFFECTS; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SILICON

ST surface micropatterns; laser crystallization; graphoepitaxy; elemental semiconductor; Si; ***surface relief gratings*** ; fused SiO2 substrate; sheet resistivity; amorphous Si; Si:P

ET Si; O*Si; SiO2; Si cp; cp; O cp; P*Si; Si:P; P doping; doped materials

L5 ANSWER 36 OF 36 INSPEC (C) 2006 IEE on STN
AN 1979:1421525 INSPEC DN A79095277; B79045911
TI ***Crystallographic*** orientation of ***silicon*** on an ***amorphous*** substrate using an artificial surface-relief ***grating*** and laser crystallization.
AU Geis, M.W.; Flanders, D.C.; Smith, H.I. (Lincoln Lab., MIT, MA, USA)
SO Applied Physics Letters (1 July 1979) vol.35, no.1, p.71-4. 15 refs.
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB Uniform ***crystallographic*** orientation of ***silicon*** films, 500 nm thick, has been achieved on amorphous fused-silica substrates by laser ***crystallization*** of ***amorphous*** ***silicon*** deposited over surface-relief ***gratings*** etched into the substrates. The ***gratings*** had a square-wave cross section with a 3.8- mu m spatial period and a 100-nm depth. The (100) directions in the silicon were parallel to the ***grating*** and perpendicular to the substrate plane. The authors propose that orientation of overlayer films induced by artificial surface patterns be called graphoepitaxy.
CC A6855 Thin film growth, structure, and epitaxy; A8110J Growth from solid phases; A8115 Methods of thin film deposition; B0520 Thin film growth
CT CRYSTALLISATION; ELEMENTAL SEMICONDUCTORS; EPITAXIAL GROWTH; LASER BEAM EFFECTS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; SILICON
ST amorphous substrate; laser crystallization; crystallographic orientation; graphoepitaxy; Si film; ***surface relief gratings***
ET Si

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(FILE 'HOME' ENTERED AT 08:01:12 ON 26 JAN 2006)

FILE 'STNGUIDE' ENTERED AT 08:01:20 ON 26 JAN 2006

FILE 'HOME' ENTERED AT 08:01:24 ON 26 JAN 2006

FILE 'CAPLUS, INSPEC' ENTERED AT 08:01:32 ON 26 JAN 2006

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L1        142298 S (GRATING OR COUPLER OR DFG)
L2             0 S CYSTAL?(5A)SILICON
L3         72758 S CRYSTAL?(5A)SILICON
L4         63412 S AMORPHOUS(5A)SILICON
L5            36 S L1 AND L3 AND L4

=> s l1 and (ion(5a)(implant? or bombard? or dop?))
L6           744 L1 AND (ION(5A)(IMPLANT? OR BOMBARD? OR DOP?))

=> s l6 and (si or silicon or soi)
L7           187 L6 AND (SI OR SILICON OR SOI)

=> d all 1-187
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L7 ANSWER 1 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2006:16175 CAPLUS
ED Entered STN: 08 Jan 2006
TI High speed 2 .times. 2 optical switch in ***silicon*** -on-insulator based on plasma dispersion effect
AU Sun, Fei; Yu, Jin-Zhong; Chen, Shao-Wu
CS National Key Laboratory on Integrated Optoelectronics, Institute of Semiconductors, Chinese Academy of Sciences, Beijing, 100083, Peop. Rep. China
SO Chinese Physics Letters (2005), 22(12), 3097-3099
CODEN: CPLEEU; ISSN: 0256-307X
PB Chinese Physical Society
DT Journal
LA English
CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Based on free carrier plasma dispersion effect, a 2.times.2 optical switch is fabricated in a ***silicon*** -on-insulator substrate by inductively coupled-plasma technol. and ***ion*** ***implantation*** . The

device has a Mach-Zehnder interferometer structure, in which two directional ***couplers*** serve as the power splitter and combiner. The switch presents an insertion loss of 3.04 dB and a response time of 496 ns.

RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(16) Yang, D; Opt Commun 2005, V250, P48 CAPLUS

L7 ANSWER 2 OF 187 CAPLUS

AN 2005:1284944 CAPLUS

ED Entered STN: 08 Dec 2005

TI Room-temperature luminescence from Er-doped SiOx films containing ***Si*** nanoparticles

AU Chen, Wei-de; Chen, Chang-yong; Bian, Liu-fang

CS Institute of Semiconductors, Chinese Academy of Sciences, Beijing, 100083, Peop. Rep. China

SO Faguang Xuebao (2005), 26(5), 647-650
CODEN: FAXUEW; ISSN: 1000-7032

PB Kexue Chubanshe

DT Journal

LA Chinese

CC 73 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Er3+ photoluminescence (PL) in ***silicon*** -based materials has been attracting much interest because of its potential application in ***Si*** -based optoelectronic devices. Er3+ ***ions*** can be ***doped*** into different hosts, such as cryst. ***silicon*** , hydrogenated amorphous ***silicon*** suboxide (a-SiOx:H), SiO2 film contg. ***Si*** nanocrystals and so on. In this report PL properties of undoped and Er3+-doped SiOx films contg. amorphous ***Si*** nanoparticles were studied. A-SiOx films contg. ***Si*** nanoparticles were prepd. by plasma enhanced chem. vapor deposition (PECVD) using a gas source with mixt. of SiH4 and N2O. Erbium ***ions*** were ***implanted*** into as-deposed SiOx films at 500 keV with a varying dose range of (1 .apprx. 3) .times. 1015/cm2 and then annealed at 300 .apprx. 900 .degree.C for 30 s under N2. Visible PL expts. were performed with a Dilor XY-800 triple ***grating*** spectrometer with a charge-coupled device (CCD) detector. The samples were excited by 514.5 nm line of Ar+ laser. The Er3+ IR PL spectra were measured using FTIR spectrometer (Bruker IFS120HR). The wavelength of Ar+ laser is 514.5 .mu.m and the nominal laser power was 200 mW. The results showed that the PL intensity from nc- ***Si*** in SiO2 at 750 nm is one order of magnitude stronger than that from amorphous ***silicon*** clusters in a-SiOx:H, and the PL intensity from Er3+ at 1.54 .mu.m in Er doped a-SiOx:H is a factor of 4 higher than that in Er doped SiO2. The PL and crystallinity of a-SiOx:H as function of annealing temp. were also studied. In combination with the Raman measurement, the results show that photoluminescence from amorphous ***Si*** nanoparticles also follows the quantum confinement model as in ***Si*** -nanocrystals. Our study indicates that a competitive relationship between the light emissions of a- ***Si*** clusters and Er3+ in the Er-doped a-SiOx:H film is also present and the films yield efficient Er3+ emission even superior to that of Er doped SiO2 contg. ***Si*** nanocrystals, suggesting a- ***Si*** clusters can also act as both the absorbing medium and sensitizer in Er3+ excitation as nc- ***Si*** in Er doped SiO2. Er3+ emission intensity does not depend strongly upon whether it is nc- ***Si*** or a- ***Si*** clusters. These results presented here open up a route towards

the fabrication of efficient ***Si*** -based light-emitting devices.

L7 ANSWER 3 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:1121577 CAPLUS
DN 143:486930
ED Entered STN: 19 Oct 2005
TI Manufacture of double- ***grating*** metal oxide semiconductor transistor
IN Zhang, Shengdong; Chen, Wenxin; Huang, Ru; Liu, Xiaoyan; Zhang, Xing; Han, Ruqi; Wang, Yangyuan
PA Peking University, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.
CODEN: CNXXEV
DT Patent
LA Chinese
IC ICM H01L029-78
ICS H01L021-336
CC 76-3 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1567595	A	20050119	CN 2003-137771	20030624
PRAI	CN 2003-137771		20030624		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
CN 1567595	ICM	H01L029-78
	ICS	H01L021-336
	IPCI	H01L0029-78 [ICM,7]; H01L0021-336 [ICS,7]

AB The title double- ***grating*** metal oxide semiconductor (MOS) transistor comprises a ***silicon*** substrate, an insulating medium layer, a source/drain region, a channel region, ***grating*** medium layers, and ***grating*** electrodes. The channel region is a ***silicon*** wall fabricated on the insulating medium layer and vertical to the substrate. The ***grating*** medium layers and the ***grating*** electrodes are disposed along the length direction and sym. at the left and right sides above the channel region, and the ***grating*** electrodes disposed sym. at the two sides are self-aligned and elec.-insulated to each other. The invention has the advantages of no parasitic components and good prospect for application in high-speed low-power integrated circuit.
ST double ***grating*** metal oxide semiconductor transistor manuf
IT Polishing
(chem.-mech.; manuf. of double- ***grating*** metal oxide semiconductor transistor)
IT Vapor deposition process
(chem.; manuf. of double- ***grating*** metal oxide semiconductor transistor)
IT Corrosion
Doping
Etching
Integrated circuits
Ion ***implantation***
MOS transistors
Photolithography
Semiconductor device fabrication
(manuf. of double- ***grating*** metal oxide semiconductor transistor)
IT 7440-21-3, ***Silicon*** , processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manuf. of double- ***grating*** metal oxide semiconductor transistor)
IT 7631-86-9P, ***Silicon*** dioxide, processes 12033-89-5P, ***Silicon*** nitride, processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)
(manuf. of double- ***grating*** metal oxide semiconductor transistor)
IT 7440-38-2, Arsenic, uses 7440-42-8, Boron, uses

RL: MOA (Modifier or additive use); USES (Uses)
(manuf. of double- ***grating*** metal oxide semiconductor transistor)

IT 7664-38-2, Phosphoric acid, uses 7664-39-3D, Hydrogen fluoride, mixt. with ammonium fluoride 12125-01-8D, Ammonium fluoride, mixt. with hydrogen fluoride
RL: NUU (Other use, unclassified); USES (Uses)
(manuf. of double- ***grating*** metal oxide semiconductor transistor)

L7 ANSWER 4 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:603450 CAPLUS
ED Entered STN: 13 Jul 2005
TI Submicrometer period ***silicon*** diffraction ***gratings*** by porous etching
AU Nagy, N.; Volk, J.; Hamori, A.; Barsony, I.
CS Research Institute for Technical Physics and Materials Science, MTA MFA, Budapest, 1525, Hung.
SO Physica Status Solidi A: Applications and Materials Science (2005), 202(8), 1639-1643
CODEN: PSSABA; ISSN: 0031-8965
PB Wiley-VCH Verlag GmbH & Co. KGaA
DT Journal
LA English
CC 74 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB We have developed a new technique to manuf. diffraction ***gratings*** on porous ***silicon*** and on ***silicon*** interface. Using holog. facilitate to adjust the periodic length of ***gratings*** in the submicron range. The holog. exposured and developed photoresist applied on the ***silicon*** surface provides the mask for the ***ion*** ***implantation*** . The sinusoidal ***grating*** between the substrate and the porous ***silicon*** layer is achieved after the anodic etch process. The PS layer can be removed by alkali etching. Sinusoidal one- and two-dimensional diffraction ***gratings*** have been produced with 375 nm periodic length. Their AFM images are shown. The diffraction efficiencies were measured.
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 5 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:529273 CAPLUS
DN 143:295257
ED Entered STN: 20 Jun 2005
TI Producing method for distributed Bragg reflector semiconductor laser with tunable wavelength
IN Lu, Yu; Zhang, Jing; Zhu, Hongliang
PA Inst. of Semiconductors, CAS, Peop. Rep. China
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, No pp. given
CODEN: CNXXEV
DT Patent
LA Chinese
IC ICM H01S005-00
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1527447	A	20040908	CN 2003-106828	20030303
PRAI	CN 2003-106828		20030303		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

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 CN 1527447      ICM    H01S005-00
                 IPCI   H01S0005-00 [ICM,7]
AB   The title method includes the following steps: (1) epitaxially growing
     multiple quantum well structures on N-type indium phosphide substrate, (2)
     growing SiN and   ***silicon***   dioxide dielec. layer on the multiple
     quantum well layer, rapidly annealing, and photolithog., (3) selectively
     etching to eliminate InGaAs layer, indium phosphide layer and InGaAsP
     layer, (4) opening   ***grating***   window in the indium phosphide layer
     by photolithog., maintaining indium phosphide layer on the active area,
     removing indium phosphide layer in the   ***grating***   window, and
     producing uniform   ***grating***   in large area, (5) selectively etching
     indium phosphide layer and epitaxially growing   ***grating***  -covering
     layer and electrode contact layer, (6) forming single ridged strip and
     elec. isolating trench by photolithog., depositing SiO2 layer, and
       ***implanting***     ***ions***   in isolating slot to form high isolating
     resistance area, and (7) sputtering to form P electrode and N electrode.
ST   tunable distributed bragg reflector semiconductor laser quantum well
     intermixing
IT   Quantum well devices
        (intermixing; producing method for distributed bragg reflector
        semiconductor laser with tunable wavelength)
IT   Annealing
     Bragg reflectors
     Epitaxy
     Etching
       ***Ion***     ***implantation***
     Photolithography
     Semiconductor lasers
     Sputtering
        (producing method for distributed bragg reflector semiconductor laser
        with tunable wavelength)
IT   7631-86-9,   ***Silicon***   dioxide, uses   12033-89-5,   ***Silicon***
     nitride, uses   12645-36-2, Indium gallium arsenide phosphide
     22398-80-7, Indium phosphide, uses   106070-25-1, Indium gallium arsenide
     RL: CPS (Chemical process); DEV (Device component use); PEP (Physical,
     engineering or chemical process); PROC (Process); USES (Uses)
        (producing method for distributed bragg reflector semiconductor laser
        with tunable wavelength)

L7   ANSWER 6 OF 187  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2005:171345  CAPLUS
DN   142:327430
ED   Entered STN:  01 Mar 2005
TI   Bipolar junction-type   ***grating***   transistor with high performance
     and its manufacture
IN   Jin, Xiangliang; Chen, Jie; Qiu, Yulin
PA   Microelectronics Center, Chinese Academy of Sciences, Peop. Rep. China
SO   Faming Zhuanli Shenqing Gongkai Shuomingshu, 12 pp.
     CODEN: CNXXEV
DT   Patent
LA   Chinese
IC   ICM  H01L031-00
CC   76-3 (Electric Phenomena)
     Section cross-reference(s): 74
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   CN 1459874           A     20031203    CN 2002-120354         20020523
PRAI CN 2002-120354             20020523
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------  -----  --------------------------------------------------
 CN 1459874      ICM    H01L031-00
                 IPCI   H01L0031-00 [ICM,7]
AB   The   ***grating***   transistor consists of a p-type   ***Si***
     substrate, a SiO2 layer grown epitaxially on the   ***Si***   substrate, a
     metal layer on the SiO2 layer, and a p+n implanted junction on the
       ***Si***   substrate at one side of the MOS capacitor.  The incoming light
     is converted on the SiO2 contact interface into signal charge that is
     stored in the potential well, and the signal charge is drift-read out
     under elec. field and it can be coupled with the charge (its polarity is
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opposite to that of the signal charge) in the implanted junction to form composite current to be read out. The process involves thermal oxidn. of p-type ***Si*** substrate to form SiO2 film, photoetching to form pos. and neg. electrodes, and gate on the active region, field oxidizing, etching to form gate oxidn. opening, gate oxidizing, depositing poly- ***Si*** layer, photoetching the poly- ***Si*** gate, ***implanting*** and diffusing n+ ***ion*** in the neg. electrode region, ***implanting*** and diffusing n- ***ion*** in the pos. electrode region to form n- well, ***implanting*** and diffusing p+ ***ion*** in the n- well, depositing SiO2 film, etching to form electrode contact opening, Al depositing, etching to form Al electrode, depositing to form a surface passivated film, and etching to form a bonding layer.

ST bipolar junction transistor ***silicon*** silica aluminum MOS capacitor photoetching; metal oxide semiconductor capacitor bipolar junction ***grating*** transistor

IT Bipolar transistors
Diffusion
Electric field
Etching
Gate contacts
Ion ***implantation***
MOS capacitors
Oxidation
Polarity
Potential well
Semiconductor junctions
(high-performance bipolar junction-type ***grating*** transistor manuf.)

IT Etching
(photochem.; high-performance bipolar junction-type ***grating*** transistor manuf.)

IT 7429-90-5, Aluminum, uses 7440-21-3, ***Silicon*** , uses 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(high-performance bipolar junction-type ***grating*** transistor manuf.)

L7 ANSWER 7 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:914765 CAPLUS
DN 142:188093
ED Entered STN: 02 Nov 2004
TI Method for forming shallow junction of semiconductor device
IN Oh, Chung Yeong
PA Anam Semiconductor., Ltd., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
IC ICM H01L021-336
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 48
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2001087474	A	20010921	KR 1999-68498	19991231
PRAI	KR 1999-68498		19991231		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
KR 2001087474	ICM	H01L021-336
	IPCI	H01L0021-336 [ICM,7]

AB A method for forming a shallow junction of a semiconductor device is provided to prevent diffusion of B ions by performing a spike thermal process. A field oxide layer is formed on a field region of a semiconductor substrate. A gate oxide layer is formed on the semiconductor substrate. A gate is formed by depositing and etching a polysilicon layer on the gate oxide layer. An insulating layer spacer is formed at a side of the gate. A photoresist layer is applied on the substrate. A photoresist layer pattern is formed by patterning the photoresist layer. A drain/source region having a shallow junction is formed by ***implanting*** B ***ions*** . A C region is formed on

the drain/source region by ***implanting*** C ***ions*** . A spike thermal process was performed to activate B, recover a damage of a ***grating*** , and prevent a diffusion of the B ions.
ST forming shallow junction semiconductor device
IT Diffusion
Doping
Etching
Photolithography
(fabrication step; forming shallow junction of semiconductor device)
IT Semiconductor device fabrication
(forming shallow junction of semiconductor device)
IT 7440-21-3, ***Silicon*** , processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(device component; forming shallow junction of semiconductor device)
IT 7440-42-8D, Boron, ***ions*** , processes 7440-44-0D, Carbon, ***ions*** , processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(fabrication step, ***implantation*** ; forming shallow junction of semiconductor device)

L7 ANSWER 8 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:748399 CAPLUS
DN 143:86545
ED Entered STN: 14 Sep 2004
TI Spontaneously generated sinusoidal-like structures on Ti-Ni thin film under focused ***ion*** -beam ***bombardment***
AU Fu, Yongqi; Bryan, Ngoi Kok Ann
CS Innovation in Manufacturing Systems and Technology, Singapore-Massachusetts Institute of Technology Alliance, 639798, Singapore
SO Optics Express (2004), 12(16), 3707-3712
CODEN: OPEXFF; ISSN: 1094-4087
URL: http://www.opticsexpress.org/view_file.cfm?doc=%24%29%3C7%2EKP%20%20%0A&id=%24%2A%2CO%2FJ%20%20%20%0A
PB Optical Society of America
DT Journal; (online computer file)
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB A new fabrication method for a sinusoidal-like structure is described. The sinusoidal structure can be spontaneously self-formed on the surface of a substrate by focused ***ion*** -beam ***bombardment*** with raster scanning and an ***ion*** incident angle perpendicular to the sample surface (normal incidence). The substrate material is a ***silicon*** wafer coated with 2-.mu.m-thick Ti-Ni thin film. The authors show by measurement and anal. of the ***grating*** characteristics at the working wavelength range from 50 to 1500 nm that the technique of self-organized formation is a valid approach for microfabrication of diffractive structures, and the spontaneously generated structure under ***ion*** ***bombardment*** is applicable for a sinusoidal ***grating*** that functions from the UV to the near-IR wavelength range.
ST diffractive sinusoidal structure fabrication ***ion*** beam ***bombardment*** titanium nitride
IT Machining
(ion-beam milling; spontaneously generated sinusoidal-like structures on Ti-Ni thin film under focused ***ion*** -beam ***bombardment***)
IT Diffraction ***gratings***
(spontaneously generated sinusoidal-like structures on Ti-Ni thin film under focused ***ion*** -beam ***bombardment***)
IT 25583-20-4, Titanium nitride
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(spontaneously generated sinusoidal-like structures on Ti-Ni thin film under focused ***ion*** -beam ***bombardment***)
IT 15091-79-9, Gallium(1+), processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(spontaneously generated sinusoidal-like structures on Ti-Ni thin film

under focused ***ion*** -beam ***bombardment***)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 9 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:424966 CAPLUS
DN 141:357141
ED Entered STN: 26 May 2004
TI Structure and optical properties of sol-gel derived Gd2O3 waveguide films
AU Guo, Hai; Yang, Xudong; Xiao, Teng; Zhang, Weiping; Lou, Liren; Mugnier, Jacques
CS University of Science and Technology of China, Structure Research Laboratory, Academia Sinica, Hefei, Anhui, 230026, Peop. Rep. China
SO Applied Surface Science (2004), 230(1-4), 215-221
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-3 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Pure and rare earth doped Gd oxide (Gd2O3) waveguide films were prepd. by a simple sol-gel process and dip-coating method. Gd2O3 was successfully synthesized by hydrolysis of Gd acetate. TGA and DTA were used to study the thermal chem. properties of dried gel. Structure of Gd2O3 films annealed at different temp. ranging from 400 to 750.degree. were studied by FTIR spectroscopy, XRD and TEM. Gd2O3 starts crystg. at .apprx.400.degree. and the crystallite size increases with annealing temp. Oriented growth of (4 0 0) face of Gd2O3 was obsd. when the films were deposited on (1 0 0) ***Si*** substrate and annealed at 750.degree.. The laser beam (.lambda.=632.8 nm) was coupled into the film by a prism ***coupler*** and propagation loss of the film measured by scattering-detection method is .apprx.2 dB/cm. Luminescence properties of Eu ***ions*** ***doped*** films were measured and are discussed.
ST structure optical property sol gel gadolinium oxide waveguide film; europium doped gadolinium oxide photoluminescence
IT IR spectra
Luminescence
Sol-gel processing
Surface structure
X-ray diffraction
(structure and optical properties of sol-gel derived Gd2O3 waveguide films)
IT 7440-53-1, Europium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(dopant, for Gd2O3; structure and optical properties of sol-gel derived Gd2O3 waveguide films)
IT 12064-62-9P, Gadolinium oxide (Gd2O3)
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)
(doped with Eu; structure and optical properties of sol-gel derived Gd2O3 waveguide films)
IT 32718-54-0, Methoxyethanol
RL: NUU (Other use, unclassified); USES (Uses)
(in GdO sol-gel processing; structure and optical properties of sol-gel derived GdO waveguide films)
IT 111-40-0, Diethylenetriamine
RL: NUU (Other use, unclassified); USES (Uses)
(in Gd2O3 sol-gel processing; structure and optical properties of sol-gel derived Gd2O3 waveguide films)
IT 16056-77-2, Gadolinium acetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(structure and optical properties of sol-gel derived Gd2O3 waveguide films)

IT 7440-21-3, ***Silicon*** , uses
RL: NUU (Other use, unclassified); USES (Uses)
(substrate; structure and optical properties of sol-gel derived Gd2O3 waveguide films)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 10 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:329729 CAPLUS
DN 142:122899
ED Entered STN: 23 Apr 2004
TI Self-organized formation of a blazed- ***grating*** -like structure induced by focused ion-beam scanning
AU Fu, Yongqi; Bryan, Ngoi Kok Ann; Zhou, Wei
CS Innovation in Manufacturing Systems and Technology, Singapore-Massachusetts Institute of Technology Alliance, 639798, Singapore
SO Optics Express (2004), 12(2), 227-233
CODEN: OPEXFF; ISSN: 1094-4087
URL: http://www.opticsexpress.org/view_file.cfm?doc=%24%28L%23%2BI%40%20%20%0A&id=%24%29L%2F%28J%20%20%20%0A
PB Optical Society of America
DT Journal; (online computer file)
LA English
CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB A new one-step method, which has been named self-organized formation, for microfabrication of blazed- ***grating*** -like structures after ***bombardment*** with a focused ***ion*** beam (FIB) with an ion energy of 50 keV and a beam current of 0.5 nA is presented. The structure is fabricated by the FIB by raster scanning (not by patterned scanning) upon a substrate of a ***silicon*** wafer, ***Si*** (100), with total scanning time of 14 min. With this method the parameters are unchanged during the whole process, unlike for the point-by-point direct writing technique, in which the exposure intensity or the electron- or ion-beam dose is changed for each point. The surface roughness of the structure, Ra, is 2.5 nm over an area of 1 .mu.m .times. 1 .mu.m. To evaluate the performance of this method we carried out a simulation, using the PCGrate program. The simulated diffraction efficiency, of diffraction order -3 working in the reflection mode, can be as much as 79.1% for the violet wavelength of 400 nm. Using a He-Ne laser as the light source produced a measured diffraction efficiency of the order of -2 of 70.4%, which is near the simulated value of 76.9% at a wavelength of 600 nm. The depth and the period of the structure can be controlled by process parameters of the FIB, such as ion energy and ion flux.
ST selforganized ***silicon*** blazed ***grating*** structure ***ion*** beam ***bombardment***
IT ***Ion*** ***bombardment***
Microstructure
Optical diffraction

```
     Surface roughness
        (self-organized formation of blazed-  ***grating***  -like structure
        induced by focused ion-beam scanning)
IT   7440-21-3,   ***Silicon***  , properties
     RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP
     (Physical process); PROC (Process)
        (self-organized formation of blazed-  ***grating***  -like structure
        induced by focused ion-beam scanning)
RE.CNT  12    THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7   ANSWER 11 OF 187  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2004:306181  CAPLUS
DN   140:313456
ED   Entered STN:  15 Apr 2004
TI   Method for forming cantilever beam model micro-electromechanical system
IN   Chen, Anchor; Hong, Gary
PA   United Microelectronics Corp., Taiwan
SO   U.S., 18 pp.
     CODEN: USXXAM
DT   Patent
LA   English
IC   ICM  H01L021-311
INCL 438694000; 438048000; 438052000; 438053000
CC   76-3 (Electric Phenomena)
     Section cross-reference(s): 73
FAN.CNT 1
     PATENT NO.          KIND   DATE        APPLICATION NO.        DATE
     ---------------     ----   --------    --------------------   --------
PI   US 6720267           B1    20040413    US 2003-249149         20030319
     CN 1532137           A     20040929    CN 2004-10006410       20040227
PRAI US 2003-249149       A     20030319
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ------------------------------------------------
 US 6720267      ICM    H01L021-311
                 INCL   438694000; 438048000; 438052000; 438053000
                 IPCI   H01L0021-311 [ICM,7]
                 NCL    438/694.000; 438/048.000; 438/052.000; 438/053.000
 CN 1532137      IPCI   B81C0001-00 [ICM,7]
AB   A cantilever beam-type micro-electromech. system (MEMS) is formed on a
     substrate.  Two first electrodes are formed in a first dielec. layer on
     the substrate and a waveguide line is formed between the first electrodes.
     A patterned sacrificial layer and an arm layer are formed on the
     substrate.  Two second electrodes and a second dielec. layer are formed in
     the arm layer, and an optical   ***grating***   is formed in the second
     dielec. layer.  Finally, a cap layer is formed on the substrate, and the
     patterned sacrificial layer is removed.  The cantilever beam-type MEMS can
     be applied in the field of fiber-optic fiber-optic communication.
ST   cantilever beam model microelectromech system; MEMS cantilever beam type;
     fiber optic communication cantilever beam type MEMS
IT   Polishing
        (chem.-mech.; formation of cantilever beam model micro-electromech.
        system for)
IT   Vapor deposition process
        (chem.; formation of cantilever beam model micro-electromech. system
        for)
IT   Cantilevers (components)
     Dielectric films
     Diffraction   ***gratings***
```

Electric insulators
Waveguides
(formation of cantilever beam model micro-electromech. system)
IT Electric conductors
Epitaxy
Etching
Fiber optics
Ion ***implantation***
Optical communication
Optical filters
Photoresists
Rapid thermal annealing
Refractive index
SOI devices
(formation of cantilever beam model micro-electromech. system for)
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(formation of cantilever beam model micro-electromech. system for)
IT Micromachines
(microelectromech. devices; formation of cantilever beam model micro-electromech. system)
IT Semiconductor materials
(substrate; formation of cantilever beam model micro-electromech. system for)
IT 7429-90-5, Aluminum, uses 7440-33-7, Tungsten, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7631-86-9, Silica, uses 12033-89-5, ***Silicon*** nitride, uses 65442-43-5, Aluminum alloy, Al, Cu
RL: DEV (Device component use); USES (Uses)
(formation of cantilever beam model micro-electromech. system for)
IT 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); USES (Uses)
(formation of cantilever beam model micro-electromech. system for)
IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); USES (Uses)
(polycryst. or porous; formation of cantilever beam model micro-electromech. system for)
RE.CNT 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 12 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:278422 CAPLUS
DN 141:286456
ED Entered STN: 05 Apr 2004
TI Fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam
AU Xie, D. Z.; Ngoi, B. K. A.; Zhou, W.; Fu, Y. Q.
CS School of Mechanical and Production Engineering, Precision Engineering and Nanotechnology Center, Nanyang Technological University, Singapore, 639798, Singapore
SO Applied Surface Science (2004), 227(1-4), 250-254
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier Science B.V.
DT Journal
LA English
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 66
AB The development, during annealing, of periodic 1-dimensional ripple structure was studied. The nanoscale ripple array was fabricated on ***Si*** (0 0 1) crystal surface using focused ion beam (FIB). Annealing was performed isothermally in a flowing Ar gas ambient at 670.degree.. The morphol. of the ripple before and after annealing was analyzed using at. force microscope. The height of the ripple decreased after thermal annealing. Also, after annealing, spikes of Ga and/or Ga-rich ppt. were also obsd. on the surface of the ripples and the FIB milled areas.
ST ***silicon*** nanoripple gallium focused ***ion*** ***bombardment*** annealing
IT Flow
(argon; fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam of gallium on ***silicon***)
IT Annealing

Diffraction ***gratings***
Ion ***bombardment***
Precipitation (chemical)
Semiconductor nanostructures
Surface roughness
(fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam of gallium on ***silicon***)

IT 15091-79-9, Gallium(1+), processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam of gallium on ***silicon***)

IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam of gallium on ***silicon***)

IT 7440-37-1, Argon, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(flowing annealing gas; fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam of gallium on ***silicon***)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L7 ANSWER 13 OF 187 CAPLUS

AN 2003:913801 CAPLUS

DN 141:31997

ED Entered STN: 23 Nov 2003

TI Micro cantilevers with integrated heaters and piezoelectric detectors for low power SPM data storage application

AU Lee, Caroline Sunyong; Jin, Won-Hyeog; Nam, Hyo-Jin; Cho, Seong-Moon; Kim, Young-Sik; Bu, Jong-uk

CS Micro system Group, Device & Materials Lab., LG Electronics Institute of Technology, Seoul, S. Korea

SO Proceedings - IEEE Annual International Conference on Micro Electro Mechanical Systems, 16th, Kyoto, Japan, Jan. 19-23, 2003 (2003), 28-32
Publisher: Institute of Electrical and Electronics Engineers, New York, N. Y.
CODEN: 69ETSU; ISBN: 0-7803-7744-3

DT Conference

LA English

CC 76-7 (Electric Phenomena)
Section cross-reference(s): 48, 74

AB In this research, ***Si*** cantilevers with integrated heaters and piezoelec. sensors were studied for thermomech. writing and piezoelec. readback on a polymer film, for low power SPM (Scanning Probe Microscopy) data storage system. Data bits of 100 nm in diam. were recorded on a Poly Me Methacrylate (PMMA) film. The sensitivity of 0.22 fC/nm was obtained.

Finally, the ***Si*** cantilever with piezoelec. sensor was used to obtain charge readback signal using the ***grating*** with 30 nm depth, and the sensing ability of the piezoelec. cantilever was successfully demonstrated. The charge output based on the topog. of the film was obtained, and the pos. and neg. peak of the charge corresponded to the slope of the ***grating*** .

ST fabrication ***silicon*** cantilever PZT piezoelec sensor SPM recording

IT Etching
(anisotropic; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Vapor deposition process
(chem.; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Sol-gel processing
(coating; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Electric heaters
(elements; micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Sputtering
(etching, reactive; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Electronic device fabrication
(fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Annealing
Ion ***implantation***
Passivation
Rapid thermal annealing
(in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT ***SOI*** devices
(in micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Cantilevers (components)
Piezoelectric sensors
Recording
Scanning probe microscopy
(micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Coating process
(sol-gel; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT Etching
(sputter, reactive; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 7727-37-9, Nitrogen, uses
RL: NUU (Other use, unclassified); USES (Uses)
(annealing atm.; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 9011-14-7, Poly methyl Methacrylate
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(data-storage medium; micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 1310-58-3, Potassium hydroxide (KOH), processes
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(etchant; in fabrication of micro cantilevers with integrated heaters

and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 7440-06-4, Platinum, processes 7440-32-6, Titanium, processes 12036-10-1, Ruthenium oxide (RuO2) 12626-81-2, PZT
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 7631-86-9, Silica, processes
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 7440-21-3, ***Silicon*** , processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(in micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

IT 7440-42-8, Boron, uses
RL: MOA (Modifier or additive use); USES (Uses)
(***silicon*** dopant; in fabrication of micro cantilevers with integrated heaters and piezoelec. detectors for low power scanning probe microscopy data storage application)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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L7 ANSWER 14 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2003:913656 CAPLUS

DN 141:30691

ED Entered STN: 23 Nov 2003

TI Unique nonlinear optical and electronic properties of SiC:Ge waveguide for device applications

AU Darwish, Abdalla M.; Koplitz, Brent D.; Kukhtarev, Nicholai V.; Mitchell, Oliva; Haydel, R.; Gomlak, G.; Combs, R.

CS Physics and Engineering Department, Dillard University, New Orleans, LA, 70122, USA

SO Proceedings of SPIE-The International Society for Optical Engineering (2003), 5206(Photorefractive Fiber and Crystal Devices: Materials, Optical Properties, and Applications IX), 166-176
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

AB Using a combination of ***ion*** ***implantation*** and laser ablation techniques, a waveguide of ***ion*** ***implanted*** SiC:Ga:Ge was fabricated and was used as a CO2 laser line selector. It was obsd. that the CO2 laser produces a thermal ***grating*** which drives the optical selector with max. efficiency of 40 MHz of laser offset between the 9P20 and 9P18 CO2 laser lines. Using an external elec. field, the moving thermal ***grating*** produces a 45 MHz offset between the laser lines. This phenomenon will be explained using the Kukhtarev model. The threshold of the thermal damage for the waveguide and the device limiting will be presented.

ST ***silicon*** carbide germanium gallium waveguide nonlinear optical property

IT Diffraction ***gratings***
(reflection; unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
IT Diffusion
Stress, mechanical
(thermal; unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
IT Elastic deformation
Gas lasers
Ion ***implantation***
Laser ablation
Nonlinear optical properties
Photorefractive effect
Surface roughness
Ultrathin films
Waveguides
(unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
IT 409-21-2, ***Silicon*** carbide, uses
RL: DEV (Device component use); USES (Uses)
(germanium and gallium-doped; unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
IT 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(***silicon*** carbide doped with; unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
IT 124-38-9, Carbon dioxide, uses
RL: DEV (Device component use); USES (Uses)
(unique nonlinear optical and electronic properties of ***silicon*** carbide:germanium waveguide for device applications)
RE.CNT 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 15 OF 187 CAPLUS
AN 2003:874745 CAPLUS
DN 139:343334
ED Entered STN: 07 Nov 2003
TI Integrated waveguide ***gratings*** by ***ion*** ***implantation***
IN Goldstein, Michael
PA Intel Corp., USA
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM G02B006-12
ICS G02B006-34
INCL 385037000; 385014000
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003206698	A1	20031106	US 2002-136154	20020501
	US 6816648	B2	20041109		
PRAI	US 2002-136154		20020501		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2003206698	ICM	G02B006-12
	ICS	G02B006-34
	INCL	385037000; 385014000
	IPCI	G02B0006-12 [ICM,7]; G02B0006-34 [ICS,7]
	NCL	385/037.000
	ECLA	G02B006/124; G02B006/132; G02B006/134J; G02B006/136

AB Integrated semiconductor waveguide ***gratings*** , methods of manuf. thereof and methods of apodizing thereof are described. A semiconductor waveguide ***grating*** includes a substrate, a cladding layer disposed on the substrate, a guide structure that includes a plurality of discrete transverse sections ***implanted*** with ***ions*** disposed between adjacent transverse sections substantially free of ***implanted*** ***ions*** .

ST integrated waveguide ***grating*** ***ion*** ***implantation***

IT Diffraction ***gratings***
Ion ***implantation***
Optical waveguides
(integrated waveguide ***gratings*** by ***ion*** ***implantation***)

IT 7440-21-3, ***Silicon*** , uses 22398-80-7, Indium phosphide, uses
RL: DEV (Device component use); USES (Uses)
(integrated waveguide ***gratings*** by ***ion*** ***implantation***)

IT 7440-42-8, Boron, uses
RL: MOA (Modifier or additive use); USES (Uses)
(integrated waveguide ***gratings*** by ***ion*** ***implantation***)

RE.CNT 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD

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L7 ANSWER 16 OF 187 CAPLUS
AN 2003:785519 CAPLUS
DN 140:11150
ED Entered STN: 08 Oct 2003
TI Dose dependence of carrier and heat dynamics at an ***ion*** - ***implanted*** ***silicon*** surface measured using lens-free heterodyne transient ***grating*** method
AU Katayama, Kenji; Yamaguchi, Masahiro; Sawada, Tsuguo
CS Graduate School of Frontier Sciences, Department of Advanced Materials Science 401, The University of Tokyo, Kashiwa, Chiba, 277-8561, Japan
SO Journal of Applied Physics (2003), 94(8), 4904-4907
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB The lens-free heterodyne transient ***grating*** method was shown to reveal the dynamics of photoexcited carriers and heat on the surface region of an ***ion*** - ***implanted*** ***silicon*** in the dose range of 1011-1015 cm-2. In addn. to the fact that the detection limit of the dose was superior to that for conventional methods, several phys. properties of the carrier and heat can be obtained by analyzing transient responses. Theor. anal. provided the lifetime of carriers and thermal diffusion coeffs. in the ***ion*** - ***implanted*** surface region.
ST photoexcited carrier surface dynamics ***silicon*** ***ion*** ***implantation***
IT Electric current carriers
Ion ***implantation***
Optical pumping
Photoexcitation
Semiconductor materials
(dose dependence of carrier and heat dynamics at ***ion*** - ***implanted*** ***silicon*** surface measured by lens-free heterodyne transient ***grating*** method)
IT Electric current carriers
(lifetime; dose dependence of carrier and heat dynamics at ***ion*** - ***implanted*** ***silicon*** surface measured by lens-free heterodyne transient ***grating*** method)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(dose dependence of carrier and heat dynamics at ***ion*** - ***implanted*** ***silicon*** surface measured by lens-free heterodyne transient ***grating*** method)
RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
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L7 ANSWER 17 OF 187 CAPLUS
AN 2003:623705 CAPLUS
DN 140:49934
ED Entered STN: 14 Aug 2003
TI Angled- ***grating*** and photonic-crystal type-II antimonide lasers for high-brightness applications
AU Bewley, W. W.; Vurgaftman, I.; Felix, C. L.; Bartolo, R. E.; Lindle, J. R.; Jurkovic, M. J.; Meyer, J. R.; Turner, G. W.; Manfra, M. J.; Lee, H.; Martinelli, R. U.
CS Naval Research Laboratory, Washington, DC, 20375, USA
SO IPAP Conference Series (2001), 2(Proceedings of the 10th International Conference on Narrow Gap Semiconductors and Related Small Energy Phenomena, Physics and Applications, 2001), 125-128
CODEN: ICSPF6
PB Institute of Pure and Applied Physics
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Angled- ***grating*** distributed-feedback (.alpha.-DFB) and photonic-crystal DFB (PCDFB) lasers emitting in the mid-IR are promising sources for applications requiring a combination of high output power and good beam quality. We demonstrate that the beam quality and brightness of wide-stripe .alpha.-DFB lasers can be significantly enhanced by suppressing parasitic Fabry-Perot-like lasing modes that are not appreciably guided by the angled ***grating*** . A factor of 3 increase in brightness is demonstrated by using loss regions, created by ***bombardment*** with energetic ***silicon*** ***ions*** , to block the direct facet-to-facet gain path. Furthermore, it is shown that the beam quality of PCDFB lasers, in which a ***grating*** is defined on a two-dimensional lattice, can be improved over .alpha.-DFB devices by as much as a factor of 5.
ST angled ***grating*** photonic crystal antimonide laser high brightness
IT Lasers
(angled- ***grating*** and photonic-crystal type-II antimonide lasers for high-brightness applications)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 18 OF 187 CAPLUS
AN 2003:582991 CAPLUS
DN 139:124868
ED Entered STN: 30 Jul 2003
TI Optical functional devices and manufacture
IN Murai, Akihiko
PA Matsushita Electric Works, Ltd., Japan

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SO    Jpn. Kokai Tokkyo Koho, 9 pp.
      CODEN: JKXXAF
DT    Patent
LA    Japanese
IC    ICM  G02B006-12
      ICS  G02B006-13
CC    73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
      Properties)
FAN.CNT 1
      PATENT NO.          KIND   DATE         APPLICATION NO.        DATE
      ---------------     ----   --------     --------------------   --------
PI    JP 2003215361        A2    20030730     JP 2002-12140          20020121
PRAI  JP 2002-12140              20020121
CLASS
 PATENT NO.       CLASS  PATENT FAMILY CLASSIFICATION CODES
 --------------   -----  ---------------------------------------------------
 JP 2003215361    ICM    G02B006-12
                  ICS    G02B006-13
                  IPCI   G02B0006-12 [ICM,7]; G02B0006-13 [ICS,7]
AB    The devices comprise: a   ***Si***   substrate; photodiodes for receiving
      the light passing through a photonic crystal and reflecting at the
        ***grating***  , where the photonic crystal comprises a three
      dimensionally interleaving nanomonolithic   ***silicon***   and silica
      crystals; and the   ***grating***   comprises numerous silica crystals
      interleaving at wavelength distances.
ST      ***silicon***   silica optical functional diffraction lattice
IT    Absorbents
      Diffraction   ***gratings***
          ***Ion***     ***implantation***
      Lithography
      Nanocrystals
      Periodic structures
      Photodiodes
      Photonic crystals
      Radiation
      Strength
         (optical functional device and manuf.)
IT    7440-21-3,   ***Silicon***  , uses   7631-86-9, Silica, uses
      RL: DEV (Device component use); USES (Uses)
         (optical functional device and manuf.)

L7    ANSWER 19 OF 187  CAPLUS  COPYRIGHT 2006 ACS on STN
AN    2003:457399  CAPLUS
DN    140:171112
ED    Entered STN:  16 Jun 2003
TI    Strong blue light emission from   ***ion***     ***implanted***
        ***Si***  /SiO2 structures
AU    Skorupa, W.; Rebohle, L.; Gebel, T.; Helm, M.
CS    Nanoparc GmbH, Dresden, D-01454, Germany
SO    NATO Science Series, II: Mathematics, Physics and Chemistry (2003),
      93(Towards the First Silicon Laser), 69-78
      CODEN: NSSICD
PB    Kluwer Academic Publishers
DT    Journal; General Review
LA    English
CC    73-0 (Optical, Electron, and Mass Spectroscopy and Other Related
      Properties)
      Section cross-reference(s): 76
AB    A review.  A summary of the work performed in the prodn. of nanoclusters
      in   ***silicon***   dioxide layers enriched with   ***Si***  , Ge and Sn
      by ion beam synthesis for   ***silicon***   based light emission is
      presented.  Blue-light emission was demonstrated based on Ge-implanted
        ***silicon***   dioxide layers thermally grown on   ***silicon***
      substrates.  This version of   ***silicon***   -based light emission relies
      on Ge-related defects in the amorphous .tplbond.   ***Si***   -O-   ***Si***
      .tplbond. network.  The photoluminescence is excited by a singlet S0-S1
      transition of a neutral oxygen vacancy.
ST    review luminescence electroluminescence   ***silicon***   silica
      nanocluster
IT    Trapping
         (charge; electroluminescence of   ***ion***     ***implanted***
           ***Si***  /SiO2 structures in relation to)
```

IT Optical ***couplers***
(***ion*** ***implanted*** ***Si*** /SiO2 structures for)
IT Luminescence, electroluminescence
(of ***ion*** ***implanted*** ***Si*** /SiO2 structures)
IT Defects in solids
Luminescence
(strong blue luminescence from ***ion*** ***implanted***
Si /SiO2 structures in relation to)
IT 7440-31-5, Tin, properties 7440-56-4, Germanium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(strong blue luminescence from ***ion*** ***implanted***
Si /SiO2 structures)
IT 7440-21-3, ***Silicon*** , properties 7631-86-9, ***Silicon***
dioxide, properties
RL: PRP (Properties)
(strong blue luminescence from ***ion*** ***implanted***
Si /SiO2 structures)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L7 ANSWER 20 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:50450 CAPLUS
DN 138:295444
ED Entered STN: 22 Jan 2003
TI Transient reflecting ***grating*** spectroscopy for defect analysis in
surface region of semiconductors
AU Katayama, Kenji; Donen, Hiroshi; Sawada, Tsuguo
CS Graduate School of Frontier Science, Department of Advanced Materials
Science, The University of Tokyo, Tokyo, 113-8656, Japan
SO Review of Scientific Instruments (2003), 74(1, Pt. 2), 902-904
CODEN: RSINAK; ISSN: 0034-6748
PB American Institute of Physics
DT Journal
LA English
CC 76-2 (Electric Phenomena)
AB Ultrafast transient reflecting ***grating*** (TRG) spectroscopy was
utilized for defect anal. in the surface region of ***ion*** -
implanted ***silicon*** for the ***implantation*** range
from 1011 to 1015 cm-2. To deduce signals due to trapped carriers at
defect states, the TRG spectra at the delay time of 30 ps were measured
because ultrafast carrier dynamics such as many-body recombination had
finished before the delay time. According to the dose quantity, the peak
of the interband transition was affected and also defect-related
transitions emerged. Using this technique, implantation damage can be
detected for samples with their dose larger than 1012 cm-2. It was
proposed that TRG spectroscopy can be used as a novel anal. method for
characterizing defects in the surface region of semiconductors.
ST semiconductor surface defect analysis transient reflecting ***grating***
spectroscopy
IT Interband transition
Ion ***implantation***
(defect anal. in surface region of ***ion*** - ***implanted***
silicon by transient reflecting ***grating*** spectroscopy)
IT Semiconductor materials
Spectroscopy
Surface defects
(transient reflecting ***grating*** spectroscopy for defect anal.
in surface region of semiconductors)
IT 7440-21-3, ***Silicon*** , properties

RL: PRP (Properties); TEM (Technical or engineered material use); USES
(Uses)
(defect anal. in surface region of ***ion*** - ***implanted*** ***silicon*** by transient reflecting ***grating*** spectroscopy)
RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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AN 2002:927766 CAPLUS
DN 138:10560
ED Entered STN: 06 Dec 2002
TI Method for deep and vertical dry etching of dielectric materials
IN Lamontagne, Boris; Erickson, Lynden; Xu, Dan-Xia; Delage, Andre; Janz, Siegfried; Cheben, Pavel; Charbonneau, Sylvain
PA LNL Technologies Canada Inc., Can.
SO PCT Int. Appl., 12 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01L021-311
CC 76-11 (Electric Phenomena)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002097874	A1	20021205	WO 2002-CA784	20020528

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	CA 2349032	AA	20021128	CA 2001-2349032	20010528
PRAI	CA 2001-2349032	A	20010528		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2002097874	ICM	H01L021-311
	IPCI	H01L0021-311 [ICM,7]
CA 2349032	IPCI	H01L0021-461 [ICM,7]

AB The invention relates to a method for etching transparent dielecs., such as ***silicon*** oxide, with vertical sidewalls for use in the manuf. of planar waveguides and ***gratings*** . The process is carried out at a high etch rate using low-energy ***ion*** ***bombardment*** using C4F8 as a main etchant gas. The ***silicon*** oxide sidewall profiles are controlled by varying the temp. of the sample.
ST deep vertical dry etching dielec material
IT Inductively coupled plasma
(etching by; method for deep and vertical dry etching of dielec. materials)
IT Sputtering

(etching, ion-beam; method for deep and vertical dry etching of dielec. materials)
IT Dielectric films
(method for deep and vertical dry etching of dielec. materials)
IT Etching masks
(sputter etching masks; method for deep and vertical dry etching of dielec. materials)
IT Etching
(sputter, ion-beam; method for deep and vertical dry etching of dielec. materials)
IT 7631-86-9, Silica, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dielec.; method for deep and vertical dry etching of dielec. materials)
IT 115-25-3, Octafluorocyclobutane
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(etchant; method for deep and vertical dry etching of dielec. materials)
IT 7429-90-5, Aluminum, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(etching mask; method for deep and vertical dry etching of dielec. materials)
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 22 OF 187 CAPLUS
AN 2002:543371 CAPLUS
DN 137:239136
ED Entered STN: 22 Jul 2002
TI Transient reflecting ***grating*** spectroscopy for defect analysis of surface region of semiconductors
AU Donen, Hiroshi; Katayama, Kenji; Sawada, Tsuguo
CS Department of Advanced Materials Science, The University of Tokyo, Graduate School of Frontier Sciences, Bunkyo-ku, Tokyo, 113-8656, Japan
SO Journal of Applied Physics (2002), 92(3), 1367-1371
CODEN: JAPIAU; ISSN: 0021-8979
PB American Institute of Physics
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 66, 75, 77
AB Ultrafast transient reflecting ***grating*** (TRG) spectroscopy was applied to study the influence of various defect states on ultrafast carrier dynamics of up to 3 ps duration in an ***ion*** - ***implanted*** ***Si*** surface region. The TRG spectra revealed the energy-state distribution of 2 kinds of defect states, and photoexcited carriers were trapped in each state depending on annealing time. Probably TRG spectroscopy can should be used as an anal. method for characterizing defects in the surface region of semiconductors.
ST arsenic implanted ***silicon*** surface defect transient reflecting ***grating*** spectroscopy; Raman arsenic implanted ***silicon*** surface defect transient reflecting ***grating*** ; visible arsenic implanted ***silicon*** surface defect transient reflecting ***grating*** ; annealing arsenic implanted ***silicon*** surface defect transient reflecting ***grating*** ; reflection transient laser ***grating*** arsenic implanted ***silicon*** surface defect; ***ion*** ***implanted*** ***silicon*** transient reflecting ***grating*** surface defect arsenic
IT Annealing
Electric current carriers
Implanted ***ions***
Laser induced ***grating***
Optical reflection
Surface

Surface defects
UV and visible spectra
(transient reflecting ***grating*** spectroscopy for defect anal. of surface region of semiconductors)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(arsenic ***ion*** ***implanted*** ***silicon*** ; transient reflecting ***grating*** spectroscopy for defect anal. of surface region of semiconductors)
IT 7440-38-2, Arsenic, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(surface; transient reflecting ***grating*** spectroscopy for defect anal. of surface region of semiconductors)
RE.CNT 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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AN 2002:138568 CAPLUS
DN 137:55211
ED Entered STN: 22 Feb 2002
TI Investigation of the dynamics of phase transitions on ***silicon*** surface at light pulse heating
AU Fattakhov, Yakh'ya V.; Galyautdinov, Mansur F.; L'vova, Tat'yana N.; Zakharov, M. V.; Khaibullin, Il'dus B.
CS Kazan Physical-Technical Institute of the Russia Academy of Sciences, Kazan, 420029, Russia
SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4605(Photon Echo and Coherent Spectroscopy), 399-408
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 66
AB The nucleation and growth of local molten regions (LMRs) during the light irradn. was detected using high-speed camera and long-focus microscope. In situ dependences of sizes and d. (quantity per cm-2) of LMRs are interpreted in the frame of the following model. A great amt. of heat is transferred to the semiconductor surface during light pulse irradn. This process is nonstationary and the heat is not distributed homogeneously over the thickness of the sample. As a result, a specific short-lived state is formed, in which the semiconductor surface is superheated in the solid-state phase with respect to the equil. melting temp. Some surface areas, which contain the defects, begin to melt. Temp. of these local

molten regions immediately decreases down to the equil. melting temp. The created LMRs begin to absorb the heat from neighboring superheated solid regions. As a result, the temp. of superheated regions decreases down to the equil. m.p. No new local molten regions are formed and the sizes of existing local molten regions increase due to absorption of the energy of light pulse. To study the main features of local melting more detail in-situ studies of mechanism of this effect were carried out at incoherent light irradn. with different pulse durations and irradn. power densities. The last results agree with the superheating model. Also the dynamics of phase transitions on the surface of implanted ***Si*** at different regimes of light pulses is studied using high-speed camera and special diffraction ***gratings*** . The diffraction ***gratings*** were formed using ***ion*** ***implantation*** and the effect of local melting. The dynamics of diffraction during and after the light pulse irradn. was studied.

ST phase transition ***silicon*** surface light pulse heating; local molten region ***silicon*** surface light pulse heating

IT Semiconductor materials
Surface melting
(in situ time dependences of sizes and d. of local molten regions on surface of implanted ***Si*** during light pulse heating)

IT 7440-21-3, ***Silicon*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(dynamics of phase transitions on surface of implanted ***Si*** at different regimes of light pulses using high-speed camera and special diffraction ***gratings***)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(8) Veiko, V; Izvestiya Akademii Nauk SSSR. Seriya Fizicheskaya 1985, V49, P1236 CAPLUS
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L7 ANSWER 24 OF 187 CAPLUS

AN 2001:690632 CAPLUS

DN 136:13104

ED Entered STN: 21 Sep 2001

TI Phase transition dynamics on semiconductor surface at light pulse irradiation

AU Fattakhov, Yakh'ya V.; Galyautdinov, Mansur F.; L'vova, Tat'yana N.; Khaibullin, Il'dus B.

CS Kazan Physical-Technical Institute of the Russian Academy of Sciences, Kazan Tatarstan, 420029, Russia

SO Proceedings of SPIE-The International Society for Optical Engineering (2001), 4183(High-Speed Photography and Photonics), 531-538
CODEN: PSISDG; ISSN: 0277-786X

PB SPIE-The International Society for Optical Engineering

DT Journal

LA English

CC 75-7 (Crystallography and Liquid Crystals)
Section cross-reference(s): 66

AB The dynamics of anisotropic local melting of monocryst. and implanted ***Si*** at different regimes of light pulse irradn. was studied. The results of in situ study of local melting of monocryst. ***Si*** were carried out for the 1st time using special long-focus microscope and high-speed camera. The time dependences of the d. and sizes of local molten regions were systematically measured. The authors explain the increasing of the size of LMRs during short time by the superheating of the semiconductor in the solid state with respect to the equil. m.p. Due to superheating conditions are arisen to overcome the barrier for the formation of the liq. phase nuclei. The dynamics of anisotropic local

melting of implanted ***Si*** was studied using several optical methods and special diffraction ***gratings*** . The intensity of diffraction picture depends on the contrast of this periodical structure, i.e. From difference of cryst. and amorphous fragments of ***gratings*** . The dynamics of diffraction effectivity during and after the power light pulse was registered using high-speed camera. Three qual. stages: solid-state recrystn., local melting and liq.-phase recrystn. were obsd. exptl.

ST phase transition dynamics semiconductor surface light pulse irradn

IT ***Ion*** ***implantation***
Light
Semiconductor materials
Structural phase transition
Surface melting
Surface phase transition
(phase transition dynamics on ***implanted*** ***silicon*** semiconductor surface at light pulse irradn.)

IT Crystallization
(surface; phase transition dynamics on implanted ***silicon*** semiconductor surface at light pulse irradn.)

IT 7440-21-3, ***Silicon*** , processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
(phase transition dynamics on implanted ***silicon*** semiconductor surface at light pulse irradn.)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
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(2) Fattakhov, Y; Izvestiya Rossiyskoy Akademii Nauk Seriya fizicheskaya 1995, V59, P136 CAPLUS
(3) Heinig, K; Zentralinstitut fur Kernforschung 1985, P280
(4) Karpov, S; Fizika technika poluprovoudnikov 1986, V20, P1945 CAPLUS
(5) Naidich, Y; Kapillar fenomenon during growth and melting of crystalls 1983, P100

L7 ANSWER 25 OF 187 CAPLUS

AN 2001:676374 CAPLUS
DN 135:233661
ED Entered STN: 14 Sep 2001
TI Integrated optocoupler and its manufacturing method
IN Gebel, Thoralf; Skorupa, Wolfgang; Von Borany, Johannes; Rehbole, Lars; Borchert, Dietmar; Fahrner, Wolfgang R.
PA Forschungszentrum Rossendorf E.V., Germany
SO Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DT Patent
LA German
IC ICM H01L031-173
ICS H01L031-12; C23C014-48; H01L021-3115
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1132975	A1	20010912	EP 2001-105205	20010303
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	DE 10011258	A1	20010920	DE 2000-10011258	20000308
PRAI	DE 2000-10011258	A	20000308		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 1132975	ICM	H01L031-173
	ICS	H01L031-12; C23C014-48; H01L021-3115
	IPCI	H01L0031-173 [ICM,6]; H01L0031-12 [ICS,6]; C23C0014-48 [ICS,6]; H01L0021-3115 [ICS,6]
	ECLA	H01L031/12B; H01L031/153
DE 10011258	IPCI	H01L0031-16 [ICM,7]; H01L0031-12 [ICS,7]
	ECLA	H01L031/12B; H01L031/153

AB Integrated optical ***couplers*** comprising a substrate supporting receiving and transmitting elements positioned adjacent to each other but

sepd. by a transparent elec. insulating material are described in which the transmitting element includes a nanocluster contg. dielec. layer and the receiving and transmitting elements are formed from a monolithic block. Methods for fabricating the ***couplers*** are also described which entail forming the nanocluster-contg. dielec. layer using an ion beam synthetic technique.
ST integrated optical ***coupler*** nanocluster contg dielec
IT Optical ***couplers***
 (integrated optical ***couplers*** with nanocluster contg. dielecs. and their fabrication)
IT ***Ion*** ***implantation***
 Semiconductor device fabrication
 (integrated optical ***couplers*** with nanocluster contg. dielecs. and their fabrication using)
IT 7440-56-4, Germanium, uses
 RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (integrated optical ***couplers*** with nanocluster contg. dielecs. and their fabrication)
IT 7440-21-3, ***Silicon*** , uses 7631-86-9, Silica, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
 (integrated optical ***couplers*** with nanocluster contg. dielecs. and their fabrication)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Markwitz, A; NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH, SECTION - B: BEAM INTERACTIONS WITH MATERIALS AND ATOMS 1998
(3) Shimizu-Iwayama, T; NUCLEAR INSTRUMENTS & METHODS IN PHYSICS RESEARCH, SECTION - B: BEAM INTERACTIONS WITH MATERIALS AND ATOMS 1999
(4) Tokyo Shibaura Electric Co; EP 0899796 A 1999 CAPLUS
(5) Whitney, D; US 5583072 A 1996 CAPLUS

L7 ANSWER 26 OF 187 CAPLUS
AN 2001:672941 CAPLUS
DN 135:363946
ED Entered STN: 14 Sep 2001
TI ***Si*** -doped luminescence ***gratings***
AU Heitmann, J.; McCallum, J. C.; Meijer, J.; Stephan, A.; Butz, T.; Zacharias, M.
CS Exp. Department II, Max-Planck-Institut fur Mikrostrukturphysik, Saxony-Anhalt, Halle, D-06120, Germany
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (2001), 181, 263-267
 CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors report on the fabrication of ordered arrays of dots formed by ***Si*** implantation through a grid into SiO2 using the Bochum high-energy ion projector. Arrays of ***Si*** -implanted dots with dimensions in the micrometer and submicrometer range have been made. The samples show a strong red photoluminescence at room temp. By the combination of .mu.-photoluminescence measurements and at. force microscopy studies optical and structural characterization of the produced structures was possible. Addnl. studies by high-resoln. TEM, x-ray diffraction and temp.-dependent photoluminescence on conventionally implanted samples have been performed for comparison.
ST ***silicon*** ***ion*** ***implantation*** silica luminescent ***grating***
IT ***Ion*** ***implantation***
 (***Si*** - ***doped*** luminescence ***gratings***)
IT Diffraction ***gratings***
 (photoluminescent; ***Si*** -doped luminescence ***gratings***)
IT 7631-86-9, Silica, properties
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (***Si*** -doped luminescence ***gratings***)
IT 7440-21-3D, ***Silicon*** , ***ions*** , processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(***Si*** - ***doped*** luminescence ***gratings***)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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(2) Canham, L; Appl Phys Lett 1990, V57, P1046 CAPLUS
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(7) Ghislotti, G; J Appl Phys 1996, V79, P8660 CAPLUS
(8) Kanemitsu, Y; Phys Rev B 1994, V49, P16845 CAPLUS
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(12) Shimizu-Iwayama, T; Nucl Instr and Meth B 1999, V148, P980 CAPLUS
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(14) Zacharias, M; Phys Rev B 2000, V62 CAPLUS
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L7 ANSWER 27 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:672696 CAPLUS
DN 135:279868
ED Entered STN: 14 Sep 2001
TI Efficient blue light emission from ***silicon*** : The first integrated ***Si*** -based optocoupler
AU Rebohle, L.; Von Borany, J.; Borchert, D.; Frob, H.; Gebel, T.; Helm, M.; Skorupa, W.
CS Fraunhofer-Institut Solare Energiesysteme, Freiburg, 79100, Germany
SO Wissenschaftlich-Technische Berichte - Forschungszentrum Rossendorf (2001), FZR-314, 12-15
CODEN: WBFRFQ; ISSN: 1437-322X
DT Report
LA German
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB The suitability of Ge-implanted SiO2 layers for optoelectronic applications was studied. SiO2 films with a thickness 130-500 nm on [100] oriented, n-type ***Si*** substrates were thermally grown at 1000.degree. and ***implanted*** with Ge ***ions*** . Rapid thermal annealing at 100.degree. was applied with annealing times between 1 s and 30 s. Metal-oxide-semiconductor device structures for electroluminescence (EL) studies were prepd. using sputtered 80 nm thick of In Sn oxide layer and Al as the top and bottom electrodes, resp. EL and luminescence (PL) were measured at room temp. Both EL and PL spectra were peaked in the violet spectral region at 3.18 eV and apart from a marginally broader width of the EL peak, the spectra were almost identical. This means that the luminescence for both PL and EL was caused by the same type of luminescence center. The fabrication of an integrated optocoupler based on Ge-impregnated SiO2 demonstrated that the films were applicable for optoelectronics.
ST electroluminescence blue germanium implanted silica optical ***coupler***
IT Luminescence
Luminescence, electroluminescence
(blue; efficient from ***silicon*** integrated optocoupler)
IT Optical ***couplers***
(efficient blue light emission from ***silicon*** integrated)
IT 7440-21-3, ***Silicon*** , properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(efficient blue light emission from ***silicon*** integrated optocoupler)
IT 15888-69-4, Germanium(1+), properties
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(efficient blue light emission from ***silicon*** integrated optocoupler contg. silica implanted with)
IT 7631-86-9, Silica, properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical

process); PRP (Properties); PROC (Process); USES (Uses)
(germanium-implanted; efficient blue light emission from ***silicon*** integrated optocoupler contg. germanium-implanted)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Anon; Mel-Ari Optoelectronic Road Map, http://www.cordis.lu/esprit/src/melop-rm.htm
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(3) Knapek, P; phys stat sol (a) 1998, V167, PR5 CAPLUS
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(6) Pavesi, L; Nature 2000, V408, P440 CAPLUS
(7) Rebohle, L; Appl Phys B 2000, V71, P131 CAPLUS
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(10) Shcheglov, K; Appl Phys Lett 1995, V66, P745 CAPLUS
(11) Zhang, J; Appl Phys Lett 1997, V71, P2505 CAPLUS

L7 ANSWER 28 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:631400 CAPLUS

DN 135:350395

ED Entered STN: 31 Aug 2001

TI In situ investigation of phase transitions of implanted ***silicon*** at powerful light irradiation

AU Fattakhov, Y. V.; Galyautdinov, M. F.; L'vova, T. N.; Khaibullin, I. B.

CS Kazan Physical-Technical Institute of the Russian Academy of Sciences, Kazan, Tatarstan, 420029, Russia

SO Vacuum (2001), 63(4), 649-655
CODEN: VACUAV; ISSN: 0042-207X

PB Elsevier Science Ltd.

DT Journal

LA English

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 75, 76

AB The in situ studies of anisotropic local melting of implanted and monocryst. ***Si*** during irradn. by powerful light pulses using a high-speed camera are presented. The methods of formation of special diffraction ***gratings*** are presented. The features of application of the ***gratings*** for the in situ study of structural and phase transitions of implanted ***Si*** are discussed. One-dimensional ***gratings*** were formed by ***ion*** ***implantation*** and a special regime of laser annealing. The 2-dimensional ***gratings*** were formed by ***ion*** ***implantation*** through a metallic net shadow-mark or using photolithog. Also, the 1st results of in situ study of the effect of anisotropic local melting of monocryst. ***Si*** are presented. In situ time dependences of d. (quantity per cm2) of local molten regions are interpreted in the frame of the following model: the existence of a short-lived metastable state, characterized by superheating in the solid phase. The expts. and theor. calcns. crucial to clarify the mechanism of the effect in question are discussed.

ST phase transition ***ion*** ***implant*** ***silicon*** radiation

IT Diffraction ***gratings***
Ion ***implantation***
Laser annealing
Metastable state (energy level)
Phase transition
Photolithography
(in situ study of phase transitions of implanted ***silicon*** at powerful light irradn.)

IT Melting
(local; in situ study of phase transitions of implanted ***silicon*** at powerful light irradn.)

IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(in situ study of phase transitions of implanted ***silicon*** at powerful light irradn.)

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(2) Anon; High power lasers--science and engineering 1996, P672

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(5) Fattakhov, Y; Vacuum 1998, V51, P255 CAPLUS
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L7 ANSWER 29 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:477341 CAPLUS
DN 135:218378
ED Entered STN: 03 Jul 2001
TI A compact optical encoder with micromachined photodetector
AU Hane, K.; Endo, T.; Ito, Y.; Sasaki, M.
CS Department of Mechatronics and Precision Engineering, Tohoku University, Sendai, 980-8579, Japan
SO Journal of Optics A: Pure and Applied Optics (2001), 3(3), 191-195
CODEN: JOAOF8; ISSN: 1464-4258
PB Institute of Physics Publishing
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A compact optical encoder was fabricated using a micromachining technique for the measurement of linear displacement. The index ***grating*** for detecting the Moire signal from the superimposed ***gratings*** consists of transmission type ***Si*** grids, which are etched through by the reactive ion plasma. An array of line photodetectors is installed on the ***Si*** grids by ***ion*** ***implantation*** . A scale ***grating*** is illuminated by the light passing through the slits of the transmission index ***grating*** , and thus the light source can be placed just behind the index ***grating*** . Therefore the structure of the proposed optical encoder is compact. In the expt., the 2nd order ***grating*** imaging phenomenon under incoherent illumination was applied to the displacement sensing. The encoder signal with a high contrast is obtained at a large air gap between the 2 ***gratings*** .
ST compact optical encoder micromachine photodetector
IT Illumination
Imaging
Ion ***implantation***
Light sources
Micromachining
Optical detectors
Plasma
(a compact optical encoder with micromachined photodetector)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(3) Hane, K; Appl Opt 1987, V26, P2355
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L7 ANSWER 30 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:456372 CAPLUS
DN 135:217893
ED Entered STN: 24 Jun 2001
TI Efficient blue light emission from ***silicon*** the first integrated ***Si*** -based optocoupler
AU Rebohle, L.; Von Borany, J.; Borchert, D.; Frob, H.; Gebel, T.; Helm, M.; Moller, W.; Skorupa, W.
CS Institut fur Ionenstrahlphysik und Materialforschung, Forschungszentrum Rossendorf e.V., Dresden, 01314, Germany
SO Electrochemical and Solid-State Letters (2001), 4(7), G57-G60

CODEN: ESLEF6; ISSN: 1099-0062
PB Electrochemical Society
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The authors present the 1st all- ***Si*** integrated optocoupler, whose fabrication, using ***ion*** ***implantation*** into SiO2, is completely compatible with std. ***Si*** technol. It is based on Ge-implanted SiO2 layers as light emitter exhibiting bright blue-violet electroluminescence light with a record wall-plug efficiency of 0.5%. The electroluminescence is explained with a model in which electrons enter the SiO2 layer via tunnel injection and excite the luminescence centers by impact excitation or field ionization. A radiative T1-S0 transition of these luminescence centers then causes the obsd. electroluminescence. Finally, these optocoupling devices hold great promise for integrated optoelectronic applications, esp. in the field of sensor and biotechnol.
ST electroluminescence blue germanium implanted silica optical ***coupler***
IT Luminescence, electroluminescence
Optical ***couplers***
(efficient blue light emission from ***silicon*** first integrated ***Si*** -based optocoupler)
IT 7631-86-9, Silica, properties
RL: PRP (Properties)
(germanium-implanted; efficient blue light emission from ***silicon*** first integrated ***Si*** -based optocoupler)
RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Anon; http://www.cordis.lu/esprit/src/melop-rm.htm
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(17) Pavesi, L; Nature 2000, V408, P440 CAPLUS
(18) Rebohle, L; Appl Phys B: Lasers Opt 2000, V71, P131 CAPLUS
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(22) Sveinbjornsson, E; Appl Phys Lett 1996, V69, P2686
(23) Tsybeskov, L; Appl Phys Lett 1996, V68, P2058 CAPLUS
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L7 ANSWER 31 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:391129 CAPLUS
DN 135:187219
ED Entered STN: 31 May 2001
TI Virtual mesa and spoiler midinfrared angled- ***grating*** distributed feedback lasers fabricated by ***ion*** ***bombardment***
AU Bartolo, R. E.; Bewley, W. W.; Felix, C. L.; Vurgaftman, I.; Lindle, J. R.; Meyer, J. R.; Knies, D. L.; Grabowski, K. S.; Turner, G. W.; Manfra, M. J.
CS Naval Research Laboratory, Washington, DC, 20375, USA
SO Applied Physics Letters (2001), 78(22), 3394-3396
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

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AB   The suppression of parasitic Fabry-Perot-like lasing modes substantially
     enhances the beam quality and brightness of wide-stripe angled-
       ***grating***   distributed feedback lasers emitting in the mid-IR.  The
     direct facet-to-facet gain path is blocked by loss regions that are
     created by   ***ion***    ***bombardment***   with 900 keV   ***Si***
       ***ions***   .  Both virtual mesa structures, in which loss regions bound
     both sides of the 300-.mu.m-wide angled gain path, and spoiler structures,
     in which loss is induced only near the facets, decrease the etendue of the
     output by nearly an order of magnitude, and increase the brightness by up
     to a factor of 3.
ST   IR distributed feedback laser virtual mesa spoiler
IT   IR lasers
     Semiconductor lasers
        (virtual mesa and spoiler mid-IR angled-  ***grating***   distributed
        feedback lasers for improved beam quality and brightness)
IT   1303-11-3, Indium arsenide (InAs), uses   12064-03-8, Gallium antimonide
     (GaSb)   111747-98-9, Aluminum antimony arsenide (AlSb0.92As0.08)
     120862-37-5, Gallium indium antimonide (Ga0.85In0.15Sb)
     RL: DEV (Device component use); USES (Uses)
        (virtual mesa and spoiler mid-IR angled-  ***grating***   distributed
        feedback lasers using)
RE.CNT  12    THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(4) Bewley, W; IEEE Photonics Technol Lett 2000, V12, P477
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(12) Vurgaftman, I; J Appl Phys 2000, V88, P6997 CAPLUS
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L7   ANSWER 32 OF 187  CAPLUS  COPYRIGHT 2006 ACS on STN
AN   2001:377006  CAPLUS
DN   134:373877
ED   Entered STN:  25 May 2001
TI   X-ray device
IN   Kitamura, Msaru; Fujiwara, Shigenori; Katayama, Masahiro
PA   Toshiba Corp., Japan
SO   Jpn. Kokai Tokkyo Koho, 7 pp.
     CODEN: JKXXAF
DT   Patent
LA   Japanese
IC   ICM  G21K001-06
     ICS  G21K001-06; G21K001-00; H05H013-04
CC   73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
     Properties)
     Section cross-reference(s): 8, 63
FAN.CNT 1
     PATENT NO.          KIND   DATE       APPLICATION NO.       DATE
     ---------------     ----   --------   --------------------  --------
PI   JP 2001141893        A2    20010525   JP 1999-328473        19991118
PRAI JP 1999-328473             19991118
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
 -------------   -----  ----------------------------------------------
 JP 2001141893   ICM    G21K001-06
                 ICS    G21K001-06; G21K001-00; H05H013-04
                 IPCI   G21K0001-06 [ICM,7]; G21K0001-06 [ICS,7]; G21K0001-00
                        [ICS,7]; H05H0013-04 [ICS,7]
AB   The invention relates to a   ***Si***   crystal x-ray   ***grating***   ,
     suited for use in a SOR beam line for angiog. applications, wherein oxygen
     or carbon ions are injected to the   ***Si***   crystal for controlling
     the x-ray reflection properties.
ST     ***silicon***   crystal x ray   ***grating***
IT   X-ray devices
        (crystal   ***grating***   ; x-ray crystal   ***grating***   )
IT     ***Ion***    ***bombardment***
```

(x-ray crystal ***grating***)
IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); USES (Uses)
(x-ray crystal ***grating***)
IT 7631-86-9, Silica, uses
RL: MOA (Modifier or additive use); USES (Uses)
(x-ray crystal ***grating***)
IT 7440-44-0, Carbon, uses 7782-44-7, Oxygen, uses
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(x-ray crystal ***grating***)

L7 ANSWER 33 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:361127 CAPLUS
DN 135:159881
ED Entered STN: 20 May 2001
TI Low loss all- ***silicon*** single mode optical waveguide with small cross-section
AU Cocorullo, G.; Della Corte, F. G.; Iodice, M.; Polichetti, T.; Rendina, I.; Sarro, P. M.
CS DEIS, University of Calabria, Cosenza, Italy
SO Fiber and Integrated Optics (2001), 20(3), 207-219
CODEN: FOIOD2; ISSN: 0146-8030
PB Taylor & Francis Ltd.
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The realization of single-mode rib waveguides in std. epitaxial ***Si*** layer on lightly- ***doped*** ***Si*** substrate, using ***ion*** - ***implantation*** to form the lower cladding, is reported. The waveguides were designed with a cross-section comparable in size to the mode-field-diam. of std. single-mode optical fiber, so reducing the fiber-waveguide coupling losses. Propagation losses of .apprx.1.0 dB/cm, for .lambda. = 1.3 .mu.m, in the single mode regime, were measured. Numerical evaluation of the theor. attenuation and the transverse optical field profiles was performed, both for .lambda. = 1.3 .mu.m and .lambda. = 1.55 .mu.m. The proposed technique is low-cost, fully compatible with std. very large scale integration (VLSI) processes.
ST ***silicon*** optical waveguide
IT Fiber optics
(fiber-optic ***couplers*** ; low loss all- ***silicon*** single mode optical waveguide with small cross-section)
IT Optical ***couplers***
(fiber-optic; low loss all- ***silicon*** single mode optical waveguide with small cross-section)
IT Cladding
Doping
Epitaxy
Ion ***implantation***
Optical fibers
(low loss all- ***silicon*** single mode optical waveguide with small cross-section)
IT Optical waveguides
(rib; low loss all- ***silicon*** single mode optical waveguide with small cross-section)
IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(low loss all- ***silicon*** single mode optical waveguide with small cross-section)
RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Cocorullo, G; IEEE J Of Selected Topics in Quantum Electroncs 1998, V4(6), P983 CAPLUS
(2) Cocorullo, G; IEEE Photon Technol Lett 1995, V7, P363
(3) Moss, T; Semiconductor Opto-Electronics 1973
(4) Rickman, A; IEEE Photon Technol Lett 1992, V4(6), P633
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(6) Soref, R; IEEE J Quantum Electron 1987, VQE-23(1), P123 CAPLUS
(7) Soref, R; IEEE J Quantum Electron 1991, V27(8), P1971 CAPLUS
(8) Splett, A; IEEE Photon Technol Lett 1994, V6(3), P425

(9) Splett, J; Electron Lett 1990, V26(14), P1035

L7 ANSWER 34 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:183317 CAPLUS
DN 134:316500
ED Entered STN: 16 Mar 2001
TI Pattern writing by implantation in a large-scale PSII system with planar inductively coupled plasma source
AU Wu, Lingling; Gao, Hongjun; Manos, Dennis M.
CS Applied Science Department, College of William and Mary, Williamsburg, VA, 23187, USA
SO Materials Research Society Symposium Proceedings (2000), 625(Solid Freeform and Additive Fabrication), 111-116
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 76
AB A large-scale plasma source immersion ***ion*** ***implantation*** (PSII) system with planar coil RFI plasma source has been used to study an inkless, deposition-free, mask-based surface conversion patterning as an alternative to direct writing techniques on large-area substrates by implantation. The app. has a 0.61 m ID and 0.51 m tall chamber, with a base pressure in the10-8 Torr range, making it one of the largest PSII presently available. The system uses a 0.43 m ID planar rf antenna to produce dense plasma capable of large-area, uniform materials treatment. Metallic and semiconductor samples have been implanted through masks to produce small geometric patterns of interest for device manufg. ***Si*** ***gratings*** were also implanted to study application to smaller features. Samples are characterized by AES, TEM and variable-angle spectroscopic ellipsometry. Compn. depth profiles obtained by AES and VASE are compared. Measured lateral and depth profiles are compared to the mask features to assess lateral diffusion, pattern transfer fidelity, and wall-effects. The paper also presents the results of MAGIC calcns. of the flux and angle of ion trajectories through the boundary layer predicting the magnitude of flux as a function of 3-D location on objects in the expanding sheath.
ST ***ion*** ***implantation*** surface patterning
IT ***Implanted*** ***ions***
Ion ***implantation***
Plasma
Surface
(pattern writing by ***implantation*** in a large-scale PSII system with planar inductively coupled plasma source)
IT 7440-21-3, ***Silicon*** , processes 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes 12597-68-1, Stainless steel, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(pattern writing by implantation in a large-scale PSII system with planar inductively coupled plasma source)
IT 7727-37-9, Nitrogen, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(plasma; pattern writing by implantation in a large-scale PSII system with planar inductively coupled plasma source)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chen, A; JVST B 1994, V12(2), P918 CAPLUS
(2) Goplen, B; Magic User's Manual 1997
(3) Hopwood, J; Plasma Sources Sci and Technol 1992, V1, P109 CAPLUS
(4) Implant Sciences Corporation; Profile Code Software Instruction Manual Version 3.20
(5) J A Woollam Co Inc; Guide to using WVASE32
(6) Lieberman, M; Principles of Plasma Discharges and Materials Processing 1994, P387
(7) Malik, S; JVST B 1994, V12(2), P843 CAPLUS
(8) Matossian, J; JVST B 1994, V12(2), P850 CAPLUS
(9) Qin, S; JVST B 1994, V12(2), P962 CAPLUS
(10) Tuszewski, M; JVST B 1994, V12(2), P973 CAPLUS
(11) Venhaus, T; dissertation College of William and Mary 1999
(12) Wood, B; JVST B 1994, V12(2), P870 CAPLUS

L7 ANSWER 35 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:183289 CAPLUS
DN 134:359422
ED Entered STN: 16 Mar 2001
TI Pattern writing by implantation in a large-scale PSII system with planar inductively coupled plasma source
AU Wu, Lingling; Gao, Hongjun; Manos, Dennis M.
CS Applied Science Department, College of William and Mary, Williamsburg, VA, 23187, USA
SO Materials Research Society Symposium Proceedings (2001), 624(Materials Development for Direct Write Technologies), 205-210
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 76
AB A large-scale plasma source immersion ***ion*** ***implantation*** (PSII) system with planar coil RFI plasma source has been used to study an inkless, deposition-free, mask-based surface conversion patterning as an alternative to direct writing techniques on large-area substrates by implantation. The app. has a 0.61 m ID and 0.51 m tall chamber, with a base pressure in the 10-8 Torr range, making it one of the largest PSII presently available. The system uses a 0.43 m ID planar rf antenna to produce dense plasma capable of large-area, uniform materials treatment. Metallic and semiconductor samples have been implanted through masks to produce small geometric patterns of interest for device manufg. ***Si*** ***gratings*** were also implanted to study application to smaller features. Samples are characterized by AES, TEM and variable-angle spectroscopic ellipsometry. Compn. depth profiles obtained by AES and VASE are compared. Measured lateral and depth profiles are compared to the mask features to assess lateral diffusion, pattern transfer fidelity, and wall-effects. The paper also presents the results of MAGIC calcns. of the flux and angle of ion trajectories through the boundary layer predicting the magnitude of flux as a function of 3-D location on objects in the expanding sheath.
ST plasma source immersion ***ion*** ***implantation*** system surface patterning; lithog microfabrication plasma source immersion ***ion*** ***implantation*** surface patterning
IT ***Ion*** ***implantation***
(imagewise; large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask)
IT Plasma
(large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask)
IT Ion beam lithography
Semiconductor device fabrication
(large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask in relation to)
IT 25583-20-4, Titanium nitride(TiN)
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask)
IT 7727-37-9D, Nitrogen, ions, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask)
IT 7440-21-3, ***Silicon*** , processes 7440-25-7, Tantalum, processes 7440-32-6, Titanium, processes 12597-68-1, Stainless steel, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(substrate; large-scale plasma source immersion ***ion*** ***implantation*** system applied for patterning of metal and semiconductor surfaces through mask)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Chen, A; JVST B 1994, V12(2), P918 CAPLUS

(2) Goplen, B; Magic User's Manual 1997
(3) Hopwood, J; Plasma Sources Sci and Technol 1992, V1, P109 CAPLUS
(4) Implant Sciences Corporation; Profile Code Software Instruction Manual Version 3.20
(5) JA Woollam Co Inc; Guide to using WVASE32
(6) Lieberman, M; Principles of Plasma Discharges and Materials Processing 1994, P387
(7) Malik, S; JVST B 1994, V12(2), P843 CAPLUS
(8) Matossian, J; JVST B 1994, V12(2), P850 CAPLUS
(9) Qin, S; JVST B 1994, V12(2), P962 CAPLUS
(10) Tuszewski, M; JVST B 1994, V12(2), P973 CAPLUS
(11) Venhaus, T; dissertation College of William and Mary 1999
(12) Wood, B; JVST B 1994, V12(2), P870 CAPLUS

AN 2001:102602 CAPLUS
DN 134:287111
ED Entered STN: 12 Feb 2001
TI Improved near-infrared spectral responsivity scale
AU Shaw, Ping-Shine; Larason, Thomas C.; Gupta, Rajeev; Brown, Steven W.; Lykke, Keith R.
CS National Institute of Standards and Technology, Gaithersburg, MD, 20899-0001, USA
SO Journal of Research of the National Institute of Standards and Technology (2000), 105(5), 689-700
CODEN: JRITEF; ISSN: 1044-677X
PB National Institute of Standards and Technology
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A cryogenic radiometer-based system was constructed at the National Institute of Stds. and Technol. for abs. radiometric measurements to improve detector spectral power responsivity scales in the wavelength range from 900 nm to 1800 nm. In addn. to the liq.-He-cooled cryogenic radiometer, the system consists of a 100 W quartz-W-halogen lamp light source and a I m single- ***grating*** monochromator for wavelength selection. The system was characterized and the uncertainty in spectral power responsivity measurements evaluated. A variety of photodetectors, including In Ga arsenide photodiodes (InGaAs), Ge photodiodes, and pyroelec. detectors, were subsequently calibrated. Over most of the spectral range, the spectral power responsivity of the photodetectors can be measured with a combined relative std. uncertainty of 0.4% or less. This is more than a factor of two smaller than the authors' previous capabilities, and represents a significant improvement in the near IR (NIR) spectral power responsivity scale maintained at NIST. The authors discuss the characterization of the monochromator-based system and present results of photodetector spectral power responsivity calibrations.
ST near IR spectral responsivity scale
IT Optical detectors
(IR; improved near-IR spectral responsivity scale using optical detectors)
IT Radiation detectors
(cryogenic; improved near-IR spectral responsivity scale using optical detectors)
IT Standards, physical
(improved near-IR spectral responsivity scale using glass ***doped*** with rare earth ***ions***)
IT Glass, properties
RL: PRP (Properties)
(improved near-IR spectral responsivity scale using glass ***doped*** with rare earth ***ions***)
IT Rare earth metals, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(ions; improved near-IR spectral responsivity scale using glass ***doped*** with rare earth ***ions***)
IT 7440-00-8, Neodymium, properties 7440-19-9, Samarium, properties 7440-64-4, Ytterbium, properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(improved near-IR spectral responsivity scale using glass ***doped*** with rare earth ***ions***)
IT 7440-21-3, ***Silicon*** , properties 7440-56-4, Germanium,

properties 106070-25-1, Gallium indium arsenide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(improved near-IR spectral responsivity scale using optical detectors)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L7 ANSWER 37 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:4301 CAPLUS
DN 134:185418
ED Entered STN: 03 Jan 2001
TI Investigation of ***Si*** nanocrystals embedded into porous SiO2
matrix
AU Mikulskas, I.; Sulcas, R.; Tomasiunas, R.; Pelant, I.; Rehspringer, J.-L.;
Honerlage, B.
CS Inst. of Mater. Science and Applied Research, Vilnius Univ., Vilnius,
2040, Lithuania
SO Lietuvos Fizikos Zurnalas (2000), 40(1-3), 160-163
CODEN: LFZUE7; ISSN: 1392-1932
PB Lietuvos Fiziku Draugija
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 57, 66, 76
AB ***Si*** + ***ion*** ***implanted*** sol-gel SiO2 film on a
SiO2 substrate was studied by structural and optical methods. From at.
force images of the films ***Si*** nanocrystallites were found. The
implanted sol-gel film exhibits room temp. photoluminescence peaked in the
blue spectral region and the decay of photoluminescence is considerably
faster, as was obtained in implanted thermal SiO2 films on cryst.
Si and where photoluminescence was in the red spectral region.
From transient dynamic ***grating*** expt. rather long carrier
lifetimes were revealed under a relative high energy quantum excitation,
which indicated effective photoexcited carrier capture into the SiO2
matrix states.
ST ***silicon*** nanocrystal embedded porous silica matrix elec optical
property; defect ***silicon*** nanocrystal embedded porous silica elec
optical property; four wave mixing ***silicon*** nanocrystal embedded
porous silica matrix; surface structure ***silicon*** nanocrystal
embedded porous silica matrix; luminescence decay ***silicon***
nanocrystal embedded porous silica matrix; carrier lifetime
silicon nanocrystal embedded porous silica matrix; diffraction
grating dynamic ***silicon*** nanocrystal embedded porous
silica matrix; photocarrier ***silicon*** nanocrystal embedded porous
silica matrix optical property; sol gel silica porous matrix nanocrystal
silicon optical property; capture carrier ***silicon***
nanocrystal embedded porous silica matrix
IT Sol-gel processing
(coating; ***silicon*** nanocrystals embedded into porous silica
matrix)
IT Diffraction ***gratings***
(dynamic; ***silicon*** nanocrystals embedded into porous silica
matrix)
IT Electric current carriers
(lifetime; ***silicon*** nanocrystals embedded into porous silica
matrix)
IT Electric current carriers
(photocarriers; ***silicon*** nanocrystals embedded into porous

silica matrix)
IT ***Implanted*** ***ions***
(***silicon*** monocation; ***silicon*** nanocrystals embedded into porous silica matrix)
IT Defects in solids
Electron capture
Fluorescence decay
Four wave mixing
Luminescence
Surface structure
UV and visible spectra
(***silicon*** nanocrystals embedded into porous silica matrix)
IT Silica gel, properties
RL: PRP (Properties)
(***silicon*** nanocrystals embedded into porous silica matrix)
IT Nanocrystals
(***silicon*** ; ***silicon*** nanocrystals embedded into porous silica matrix)
IT Coating process
(sol-gel; ***silicon*** nanocrystals embedded into porous silica matrix)
IT 7440-21-3, ***Silicon*** , properties
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)
(nanocrystals; ***silicon*** nanocrystals embedded into porous silica matrix)
IT 7631-86-9, Silica, properties
RL: PRP (Properties)
(porous matrix; ***silicon*** nanocrystals embedded into porous silica matrix)
RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Dian, J; Mat Sci Eng B 2000, V69-70, P564
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(3) Guha, S; Appl Phys Lett 1997, V70, P1207
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L7 ANSWER 38 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:797719 CAPLUS
DN 132:144589
ED Entered STN: 19 Dec 1999
TI Application of laser-based linear and nonlinear surface acoustic waves in materials analysis
AU Hess, P.; Frass, A.; Lomonosov, A.
CS Institute of Physical Chemistry, University of Heidelberg, Heidelberg, 69120, Germany
SO Acta Physica Sinica (Overseas Edition) (1999), 8(Suppl.), S212-S218
CODEN: APHSEU; ISSN: 1004-423X
PB Chinese Physical Society
DT Journal
LA English
CC 75-4 (Crystallography and Liquid Crystals)
Section cross-reference(s): 73, 76
AB Pulsed ns or ps Nd:YAG lasers were used to excite surface acoustic wave pulses and ***gratings*** . Michelson interferometry and laser probe-beam deflection were employed to monitor the transient surface displacement and surface velocity, resp. The thickness and elastic consts. of amorphous layers generated by ***ion*** ***implantation*** in a ***silicon*** crystal wafer were detd. The propagation of broadband nonlinear surface pulses in anisotropic ***silicon*** crystals was studied exptl. and theor. The excitation of narrow band nonlinear transient ***gratings*** on a ***silicon*** surface was achieved. Generation of higher harmonics was caused by the nonlinear photoacoustic excitation process at the source and not by propagation in a nonlinear medium.
ST laser generated surface acoustic wave mech property detn
IT Elasticity
Mechanical properties
(laser-generated linear and nonlinear surface acoustic waves in detn.

of)
IT IR laser radiation
Surface acoustic wave
UV laser radiation
(laser-generated linear and nonlinear surface acoustic waves in mech. property detn.)
IT Testing of materials
(nondestructive; laser-generated linear and nonlinear surface acoustic waves in relation to)
IT 7440-37-1, Argon, properties
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(laser-generated linear and nonlinear surface acoustic waves in mech. property detn.)
IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(laser-generated linear and nonlinear surface acoustic waves in mech. property detn.)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Gusev, V; Appl Phys 1995, VA61, P285
(3) Hess, P; Appl Surf Sci 1996, V106, P429 CAPLUS
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AN 1999:360496 CAPLUS
DN 131:163123
ED Entered STN: 11 Jun 1999
TI Mode-selective coupling structures for monolithic integrated waveguide-detector systems
AU Koster, Tom M.; Houtsma, V. E.; Lambeck, Paul V.; Klunder, D.; Popma, Th. J. A.; Holleman, J.
CS Lightwave Devices Group, MESA Res. Inst., Univ. of Twente, Enschede, Neth.
SO Proceedings of SPIE-The International Society for Optical Engineering (1999), 3630(Silicon-Based Optoelectronics), 9-18
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB Microsystems are presented in which a SiON based optical waveguiding system is monolithically integrated with photodiodes, which are implemented in the ***Si*** substrate. Coupling structures of various type enable to transfer whether (part of) the power of one selected mode or the power of all modes propagating through the waveguide, to the photodiode. Here we focus on coupling structures for use in integrated optical absorption sensor systems, where information can be obtained from both the TE0 and TM0 mode, propagating simultaneously through the waveguide system. The coupling into the photodiodes is achieved by thinning down the thickness of the core layer in the region above the photodiode, which results in a mode specific mode-width expansion of the propagating modes. It is shown that in asym. layer systems, within a certain interaction length all TM0 power can be absorbed by the ***Si*** detector, while the TE0 mode shows only a negligible attenuation. The selectivity of the coupling can be strongly enhanced by implementing an addnl. substrate layer, having a refractive index in between that of the TE0 and TM0 mode. Both theor. and exptl. results will be presented.
ST ***silicon*** oxy nitride integrated optical waveguide photodiode
IT Optical waveguides

(integrated with photodiodes using ***silicon*** oxynitride layer)
IT ***Ion*** ***implantation***
(of p-n photodiode structure in ***silicon*** , and optical integration with waveguides)
IT Optical ***couplers***
Optical detectors
Optical integrated circuits
Photodiodes
(optical waveguides integrated with photodiodes using ***silicon*** oxynitride layer)
IT 12355-90-7, Boron fluoride BF21+
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(implantation of photodiode structure in ***silicon*** , and optical integration with waveguides)
IT 11105-01-4, ***Silicon*** oxynitride
RL: DEV (Device component use); USES (Uses)
(optical waveguides integrated with photodiodes using ***silicon*** oxynitride layer)
IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); USES (Uses)
(substrate, photodiode; optical waveguides integrated with photodiodes using ***silicon*** oxynitride layer)
IT 7631-86-9, Silica, uses
RL: DEV (Device component use); USES (Uses)
(waveguide cladding; optical waveguides integrated with photodiodes using ***silicon*** oxynitride layer)
IT 12033-89-5, ***Silicon*** nitride Si3N4, uses
RL: DEV (Device component use); USES (Uses)
(waveguide core; optical waveguides integrated with photodiodes using ***silicon*** oxynitride layer)
RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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L7 ANSWER 40 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:740197 CAPLUS
DN 130:8742
ED Entered STN: 23 Nov 1998
TI Spectral characteristics of multilayer cobalt-carbon mirrors for the .lambda. .apprxeq.7.5 nm range
AU Kolachevskii, N. N.; Louis, E.; Spiller, E.; Mitropol'skii, M. M.; Bijkerk, F.; Ragozin, E. N.
CS Fiz. Inst. im. Lebedeva, Ran, RANMoscow, 117924, Russia
SO Kvantovaya Elektronika (Moscow) (1997), 24(8), 731-735
CODEN: KVEKA3; ISSN: 0368-7147
PB Radio i Svyaz
DT Journal
LA Russian
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Multilayer Co-C mirrors on ***Si*** (111) substrates were made by electron-beam deposition and polishing of the metal layers by Kr+ ***ion*** ***bombardment*** . A new spectroscopic method was developed for estg. the parameters of plane multilayer x-ray mirrors by illuminating a sample with broad-band radiation from a laser-plasma source and by subsequent dispersion of this radiation with a diffraction ***grating*** operating in the transmission mode.
ST spectral characteristic multilayer cobalt carbon mirror; x ray reflection mirror
IT Vapor deposition process
(electron-beam; spectral characteristics of multilayer cobalt-carbon

mirrors for .lambda. .apprxeq.7.5 nm range)
IT X-ray
(reflection; spectral characteristics of multilayer cobalt-carbon mirrors for .lambda. .apprxeq.7.5 nm range)
IT ***Ion*** ***bombardment***
Polishing
(spectral characteristics of multilayer cobalt-carbon mirrors polishes using argon ions)
IT Mirrors
(x-ray; spectral characteristics of multilayer cobalt-carbon mirrors for .lambda. .apprxeq.7.5 nm range)
IT 7440-44-0, Carbon, properties 7440-48-4, Cobalt, properties
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(spectral characteristics of multilayer cobalt-carbon mirrors for .lambda. .apprxeq.7.5 nm range)
IT 16915-28-9, Krypton(1+), uses
RL: NUU (Other use, unclassified); USES (Uses)
(spectral characteristics of multilayer cobalt-carbon mirrors polishes using argon ions)

L7 ANSWER 41 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:738872 CAPLUS
DN 130:87861
ED Entered STN: 20 Nov 1998
TI Experimental performances of implanted lamellar x-ray multilayer ***grating*** . Comparison with conventional etched multilayer ***grating***
AU Trambly, H.; Vidal, B.; Roux, L.
CS Laboratoire d'Optique Electromagnetique, Greasque, Fr.
SO Nuclear Instruments & Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors, and Associated Equipment (1998), 418(2-3), 482-490
CODEN: NIMAER; ISSN: 0168-9002
PB Elsevier Science B.V.
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB An original way is given to perform x-ray diffractive optics based on local intermixing with energetic ions. The valleys of the conventional x-ray multilayer ***grating*** are replaced by mixed multilayer parts with low reflectivity. This new structure obtained by ***ion*** ***implantation*** instead of etching is called implanted multilayer ***grating*** . The authors report on diffraction measurements of implanted and etched multilayer ***grating*** at the Cu K.alpha. emission line. Comparative studies demonstrate 1st the capability to perform diffractive optics with a new process and 2nd, show similar diffraction efficiencies for both multilayer ***gratings*** . The implanted ***grating*** , which keeps a bulk structure after irradn. has therefore a better resistance to mech. stresses. Addnl. it allows one to perform new optics, using a superposition of several plane diffractive structures.
ST x ray diffraction ***grating*** tungsten ***silicon*** multilayer oxygen implantation
IT Ion beams
Ion ***implantation***
Multilayers
(exptl. performance of oxygen- ***ion*** ***implanted*** lamellar tungsten/ ***silicon*** x-ray multilayer ***grating***)
IT Diffraction ***gratings***
(x-ray, multilayer; exptl. performance of oxygen- ***ion*** ***implanted*** lamellar tungsten/ ***silicon*** x-ray multilayer ***grating***)
IT 14581-93-2, Oxygen 1+, uses
RL: DEV (Device component use); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(exptl. performance of oxygen- ***ion*** ***implanted*** lamellar tungsten/ ***silicon*** x-ray multilayer ***grating***)
IT 7440-21-3, ***Silicon*** , uses 7440-33-7, Tungsten, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(exptl. performance of oxygen- ***ion*** ***implanted***

lamellar tungsten/ ***silicon*** x-ray multilayer ***grating***)
IT 7440-02-0, Nickel, uses 9011-14-7, PMMA
RL: NUU (Other use, unclassified); USES (Uses)
(exptl. performance of oxygen- ***ion*** ***implanted*** lamellar tungsten/ ***silicon*** x-ray multilayer ***grating***)
RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
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(24) Westendorp, J; Nucl Instr and Meth B 1987, V26, P539
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L7 ANSWER 42 OF 187 CAPLUS
AN 1998:733645 CAPLUS
DN 130:31619
ED Entered STN: 19 Nov 1998
TI The dynamics of recrystallization and melting of implanted ***silicon*** at irradiation by powerful light pulses

AU Fattakhov, Ya V.; Galyautdinov, M. F.; L'vova, T. N.; Khaibullin, I. B.
CS Kazan Physical-Technical Institute of the Russian Academy of Sciences, Kazan, 420029, Russia

SO Vacuum (1998), 51(2), 255-259
CODEN: VACUAV; ISSN: 0042-207X
PB Elsevier Science Ltd.

DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75

AB One of the effects obsd. in the irradn. of semiconductors by powerful pulses of coherent and incoherent light sources in the range of durations from 0.2 ms to 10 s is the effect of anisotropic local melting. It allows valuable phys. information on semiconductor properties and processes occurring in the sample during and after pulse irradn. to be obtained. Here the dynamics of anisotropic local melting of implanted ***silicon*** for different regimes of light pulses was studied. The nucleation and growth of local regions of melting (LRM) during the light irradn. was detected by a high-speed camera. The time dependencies of the quantity and sizes of LRMs were dynamically obsd. for the 1st time. Diffraction ***gratings*** were formed using ***ion*** ***implantation*** and the effect of local melting. The dynamics of diffraction during and after the light pulse irradn. were studied. The results allow the specification of the mechanism of the effect of anisotropic local melting, and the optimization of the regimes of pulse annealing of implanted semiconductors and the regimes of formation of submicron dopant layers by rapid thermal diffusion from spin-on sources.

ST laser recrystn ***silicon*** semiconductor
IT Annealing
Diffusion
Ion ***implantation***
Laser radiation

Recrystallization
Semiconductor materials
(dynamics of recrystn. and melting of implanted ***silicon*** at irradn. by powerful light pulses)
IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(dynamics of recrystn. and melting of implanted ***silicon*** at irradn. by powerful light pulses)
RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Bonchik, A; Poverkhnost Fizika Khimiya Mekhanika (in Russian) 1986, VN5, P142
(2) Celler, G; Applied Physics Letters 1983, V43, P868 CAPLUS
(3) Emel'yanov, V; Laser Physics 1992, V2, P389
(4) Fattakhov, V; Nuclear Instruments and Methods in Physics Research B 1991, V59/60, P1072
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L7 ANSWER 43 OF 187 CAPLUS
AN 1998:680143 CAPLUS
DN 130:9329
ED Entered STN: 28 Oct 1998
TI Direct micropatterning of ***Si*** and GaAs using electrochemical development of focused ***ion*** beam ***implants***
AU Schmuki, P.; Erickson, L. E.
CS Department of Materials Science, Swiss Federal Institute of Technology (ETH/EPFL), LC-DMX, Lausanne, CH-1015, Switz.
SO Applied Physics Letters (1998), 73(18), 2600-2602
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB Focused- ***ion*** -beam ***implantation*** of Si2+ was used to write defined surface damage/implant patterns into n-type GaAs (100) and ***Si*** (100) substrates. These implant sites represent initiation sites for dissoln. processes when electrochem. polarized in HCl or HF electrolytes, resp. Selective dissoln. within the patterns is achieved if anodic polarization of the n-type material is carried out in the dark at potentials below (cathodic to) the onset of dissoln. potential of the unimplanted surface. Uniform etching within the implanted region takes place when local electropolishing conditions are established. Thus, highly defined etch patterns, e.g., lines, ***gratings*** , or pits, can be produced in the submicron range. The depth of the etched patterns corresponds to the implant/damage profile created in the implantation process, and etch stop occurs at less reactive crystal planes.
ST ***silicon*** micropatterning electrochem ***ion*** ***implantation*** ; gallium arsenide micropatterning electrochem ***ion*** ***implantation***
IT Electrochemistry
(direct micropatterning of ***Si*** and GaAs using electrochem. development of focused- ***ion*** -beam ***implants***)
IT 14175-55-4, ***Silicon*** (2+), uses
RL: MOA (Modifier or additive use); USES (Uses)
(direct micropatterning of ***Si*** and GaAs using electrochem. development of focused- ***ion*** -beam ***implants***)
IT 1303-00-0, Gallium arsenide, processes 7440-21-3, ***Silicon*** , processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(direct micropatterning of ***Si*** and GaAs using electrochem. development of focused- ***ion*** -beam ***implants***)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

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L7 ANSWER 44 OF 187 CAPLUS
AN 1998:469457 CAPLUS
DN 129:238176
ED Entered STN: 29 Jul 1998
TI The dynamics of anisotropic local melting of semiconductors at irradiation by powerful light pulses
AU Fattakhov, Ya. V.; Galyautdinov, M. F.; L'vova, T. N.; Khaibullin, I. B.
CS Kazan Physical-Technical Institute of the Russian Academy of Sciences, Kazan, 420029, Russia
SO Proceedings of the International Conference on Lasers (1998), Volume Date 1997, 20th, 440-445
CODEN: PICLDV; ISSN: 0190-4132
PB STS Press
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73
AB In this work, the dynamics of anisotropic local melting of single-crystal and implanted ***silicon*** at different regimes of light pulse irradn. was investigated using several optical methods. In particular, the special diffraction ***gratings*** were formed on the ***silicon*** surface using ***ion*** ***implantation*** and effect of local melting. The diffraction picture was obsd. at illumination of such a ***grating*** by continual irradn. by a He-Ne laser. The intensity of the diffraction picture depends on the contrast of this periodical structure, i.e. from the difference of cryst. and phase conditions of the substance of ***gratings*** fragments. The dynamics of diffraction effectivity during and after the power light pulse was registered using a high-speed camera or photomultiplier. It is possible to note three qual. stages. On the first stage, the decrease of diffraction effectivity and its full disappearance take place as heating of the sample with diffraction ***grating*** . This means that the recrystn. of the amorphous layer is finished. On the second stage, the diffraction picture arises again when the temp. of the sample with the ***grating*** reaches the temp. of local melting. In this case, the local melting begins on "amorphyzed" cells of diffraction ***grating*** . The diffraction effectivity increases as the area of molten ***silicon*** increases up to full melting of the implanted cell. The arising of microrelief on the surface of molten regions give the essential contribution in increasing the diffraction effectivity, i.e. takes place the transformation of amplitude ***grating*** in the phase ***grating*** . On the third stage, a small decrease of diffraction effectivity was obsd. after switching off the light pulse, cooling of the sample, and recrystn. of local molten regions. Thus, it is possible to det. from this expt. the parameters which are necessary to develop the phys. model of the effect and to understand the features of phase transitions during light irradn.
ST laser irradn semiconductor melting
IT Laser radiation
Melting
Semiconductor materials
(dynamics of anisotropic local melting of semiconductors during irradn. by powerful light pulses)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
(1) Celler, G; Appl Phys Lett 1983, V43(9), P868 CAPLUS
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Semiconductors and Related Materials 1985, Pt 1, P265
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L7 ANSWER 45 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:347846 CAPLUS
DN 129:142383
ED Entered STN: 10 Jun 1998
TI Optimization of CCD fabrication process for space application
AU Aslam, S.; Das, N. C.; Jhabvala, M.; Shu, P.
CS Hughes/STX Corp., Lanham, MD, 20706, USA
SO Proceedings of SPIE-The International Society for Optical Engineering
(1998), 3316(Physics of Semiconductor Devices, Vol. 1), 588-591
CODEN: PSISDG; ISSN: 0277-786X
PB SPIE-The International Society for Optical Engineering
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
AB There exists a need to design small spectrometers for space sensor
applications. Designing a small spectrometer requires a detector array
with narrow pixels to meet the smaller ***grating*** periodicity. At
Goddard Space Flight Center, an interleaved 512 pixel linear array with
200 .mu.m .times. 6 .mu.m pinned photodiode (PD) sensing sites and 500
.mu.m .times. 20 .mu.m CCD readout resistors have been designed and
fabricated. Challenges arising in the design and processing of this
detector are assocd. with the full well capacity of the odd shaped
photodiode, and with the efficiency of charge transfer from photodiode to
CCD storage area. By optimizing pinning implant process in PD area and
using suitable transfer gate voltages the desired PD signal level of 6
Me-1 was achieved.
ST ***silicon*** CCD optical detector space application
IT Charge coupled devices
Ion ***implantation***
Optical detectors
Space vehicles
(CCD photodetector fabrication process for space application)
IT 7440-21-3, ***Silicon*** , uses 7631-86-9, Silica, uses 12033-89-5,
Silicon nitride, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(CCD photodetector fabrication process for space application)
IT 7440-42-8, Boron, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(***ion*** ***implantation*** ; CCD photodetector fabrication
process for space application)
RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Burkey, B; Proc of IEDM 1984, P28
(3) Geary, J; Proc SPIE Conf on CCD and Solid state sensors 1990, P38
(4) Janesick, J; Optical sensors and electronic photography 1989, V1071
(5) Kuriyama, T; IEEE Electron Device 1991, VED-38, P949

L7 ANSWER 46 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1998:190374 CAPLUS
DN 128:198494
ED Entered STN: 01 Apr 1998
TI Development and characterization of electronic devices based on single
crystalline CoSi2/ ***Si*** (100) heterostructures and sub-micron
patterning of CoSi2-layers on ***silicon***
AU Dolle, Martin
CS Inst. Schicht- Ionentechnik, Forschungszentrum Juelich G.m.b.H., Juelich,
D-52425, Germany
SO Berichte des Forschungszentrums Juelich (1997), Juel-3446, 1-117 pp.
CODEN: FJBEE5; ISSN: 0366-0885
DT Report
LA German
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related

Properties)
Section cross-reference(s): 74, 76
AB The fabrication process of a LED array with porous ***Si*** (PS) was investigated. The fundamental idea was to control the electroluminescence (EL) of a continuous PS layer locally by an array of vertical metal-semiconductor field-effect transistors (MESFETs) based on single cryst. ***Si*** /CoSi2/ ***Si*** (100) heterostructures. The LED array consists of 2 crossed stripe- ***gratings*** buried in a ***Si*** substrate with a continuous PS layer on top. One ***grating*** acts as source-, the other one as gate- and the PS layer as drain-electrode of the transistor. SIMS and channeling measurements have shown that highly conducting source- ***gratings*** in intrinsic ***Si*** substrate can be fabricated by implantation of P through a SiO2 mask. The gate- ***grating*** was fabricated by ***implantation*** of Co ***ions*** through a mask perpendicular to the source-stripe- ***grating*** and subsequent annealing (ion beam synthesis, IBS). The current-voltage characteristic of the source and gate-electrode have proven the compatibility of P implantation and IBS of CoSi2. The compatibility of IBS with the electrolytic formation of PS was demonstrated by the obsd. EL of PS on buried CoSi2 layers. In addn., a novel patterning method for single cryst. CoSi2 layers on ***Si*** based on local oxidn. of the silicide was developed and optimized. The local oxidn. of thin CoSi2 layers was investigated in detail. A strong dependence of the patterning process on the silicide layer thickness as well as on the orientation of the oxidn. mask was obsd. The new process allows the patterning of 100 nm wide gaps between two metallic contacts by use of std. optical lithog.
ST porous ***silicon*** cobalt silicide LED fabrication; lithog patterning MESFET cobalt silicide oxidn; electroluminescence cobalt silicide porous ***silicon*** LED; elec property cobalt silicide ***silicon*** LED
IT Electroluminescent devices
Luminescence, electroluminescence
MESFET (transistors)
Semiconductor device fabrication
(fabrication and characterization of LEDs based on porous ***Si*** and single cryst. CoSi2/ ***Si*** (100) MESFETs and submicron oxidative patterning of CoSi2 layers on ***Si***)
IT Electric resistance
(of CoSi2 in CoSi2/ ***Si*** (100) heterostructures of MESFETs used for LED arrays)
IT Oxidation kinetics
(of CoSi2/ ***Si*** (100) heterostructures in MESFETs used for LED arrays)
IT Schottky barrier
(oxidn. effect on Schottky barrier in CoSi2/ ***Si*** (100) heterostructures of MESFETs used for LED arrays)
IT Oxidation
Photolithography
(submicron oxidative patterning by optical lithog of CoSi2 layers on ***Si*** in MESFETs used for LED arrays)
IT 16427-80-8, Phosphorus1+, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(P+ implantation in ***Si*** (100) of CoSi2/ ***Si*** (100) MESFETs for LED arrays)
IT 7723-14-0, Phosphorus, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; in ***Si*** (100) of CoSi2/ ***Si*** (100) MESFETs for LED arrays)
IT 7440-21-3, ***Silicon*** , properties 12017-12-8, Cobalt disilicide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(fabrication and characterization of LEDs based on porous ***Si*** and single cryst. CoSi2/ ***Si*** (100) MESFETs and submicron oxidative patterning of CoSi2 layers on ***Si***)
IT 16610-75-6, Cobalt1+, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(implantation in ***Si*** (100) for fabrication of CoSi2/ ***Si*** (100) MESFETs used for LED arrays)

L7 ANSWER 47 OF 187 CAPLUS
AN 1997:376777 CAPLUS

DN 127:128642
ED Entered STN: 16 Jun 1997
TI Photosensitivity of B, ***Si*** and N implanted silica
AU Magruder, R. H., III; Zuhr, R. A.; Hensley, D. K.; Withrow, S.
CS Dept. of Physics, Belmont University, Nashville, TN, 37212, USA
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (1997), 127/128, 492-496
CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier
DT Journal
LA English
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Silica was ***implanted*** with B and N ***ions*** at 4 MeV and ***Si*** ions at 5 MeV with nominal doses of 1.times.1016 ions/cm2. The samples were exposed to 245 nm KrF excimer irradn. with a fluence of 150 mJ/cm2 per pulse for pulse totals of 1.5, 15 and 30 J/cm2. The optical absorption from 200 to 450 nm was measured before and after each series of KrF irradiations. Broad peaks at 210 and 245 nm are obsd. in the absorption spectra. The magnitude of the absorption as well as the photosensitive response is dependent on the ***implanted*** ***ion*** species. We attribute the differences obsd. in the absorption of the as implanted samples and their response to KrF irradn. to differences in the ion-solid interactions.
ST photosensitivity ***ion*** ***implantation*** silica multiple defect; boron ***ion*** ***implant*** silica photosensitive response; ***silicon*** ***ion*** ***implant*** silica photorefractive ***grating*** ; nitrogen ***ion*** ***implant*** silica refractive index
IT Defects in solids
Diffraction ***gratings***
Implanted ***ions***
Ion ***implantation***
Photorefractive materials
Surface photolysis
UV and visible spectra
(photosensitivity of B, ***Si*** and N implanted silica explained in terms of multiple defects)
IT 7440-21-3D, ***Silicon*** , ion, uses 7440-42-8D, Boron, ion, uses 17778-88-0D, Atomic nitrogen, ion, uses
RL: MOA (Modifier or additive use); USES (Uses)
(photosensitivity of B, ***Si*** and N implanted silica explained in terms of multiple defects)
IT 7631-86-9, Silica, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(photosensitivity of B, ***Si*** and N implanted silica explained in terms of multiple defects)
RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Albert, J; Appl Phys Lett 1992, V60, P148 CAPLUS
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(14) Webb, A; J Phys D 1976, V9, P1343 CAPLUS
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L7 ANSWER 48 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:568079 CAPLUS
DN 125:288561
ED Entered STN: 24 Sep 1996
TI Atomic force microscopy of laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon***

AU Bukharaev, A. A.; Janduganov, V. M.; Samarsky, E. A.; Berdunov, N. V.
CS Kazan Physical-Technical Institute of the Russian Academy of Sciences, Sibirsky Trakt 10/7, Kazan, Tatarstan, 420029, Russia
SO Applied Surface Science (1996), 103(1), 49-54
CODEN: ASUSEE; ISSN: 0169-4332
PB Elsevier
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB The ultrathin layers with depth from 30 to 60 nm and optical absorption coeff. up to 105 cm-1 were created on the fused silica and cryst. ***silicon*** surfaces by Fe and Sb ***ions*** ***bombardment*** resp. Nanometer-scale .alpha.-Fe particles formed into glass surface layer by high dose Fe+ bombardment were responsible for optical absorption in the Fe+ implanted fused silica. The increase in the optical absorption of ***Si*** after Sb+ implantation are due to transformation of the ***silicon*** surface layer from the cryst. to the amorphous state. These layers were found to be easily evapd. by pulsed beam of UV and visible lasers due to their high light absorption. Such materials may be promising in manufg. the video disk master. The sub-micrometer diffraction ***gratings*** were produced using holog. method in order to est. the possible resoln. of these media for optical data storage. It was found with At. Force Microscope (AFM) that microtopog. of laser-induced diffraction ***gratings*** is detd. by the size of optical absorption centers. After treatment with higher laser power d. the half-micrometer bi-directional diffraction ***gratings*** on implanted ***silicon*** were obsd. by AFM. The origin of these ***gratings*** was explained in terms of the laser-induced surface electromagnetic waves.
ST atomic force microscope laser modification ***silicon*** ; silica surface modification laser microstructure periodic; optical data storage ***silicon*** ***ion*** ***bombardment***
IT Laser radiation
(at. force microscopy of laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** surface)
IT Diffraction ***gratings***
(laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** surface in relation to)
IT Microscopes
(at.-force, laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** surface)
IT Memory devices
Recording materials
(optical, laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** surface in relation to)
IT 7439-89-6, Iron, formation (nonpreparative)
RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)
(at. force microscopy of laser induced sub-micrometer periodic structures on Fe1+ implanted fused silica)
IT 14067-02-8, Iron(1+), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(at. force microscopy of laser induced sub-micrometer periodic structures on Fe1+ implanted fused silica)
IT 22679-96-5, Antimony(1+), processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(at. force microscopy of laser induced sub-micrometer periodic structures on Sb1+ implanted fused silica)
IT 7440-21-3, ***Silicon*** , processes 60676-86-0, Fused silica
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(at. force microscopy of laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** surface)

L7 ANSWER 49 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:533386 CAPLUS
DN 125:288443
ED Entered STN: 06 Sep 1996
TI From processing of cosmic ices to optical communications
AU Brown, Walter L.
CS AT and T Bell Laboratories, Murray Hill, NJ, 07974-0636, USA
SO Nuclear Instruments & Methods in Physics Research, Section B: Beam Interactions with Materials and Atoms (1996), 116(1-4), 1-12

CODEN: NIMBEU; ISSN: 0168-583X
PB Elsevier
DT Journal; General Review
LA English
CC 74-0 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 73
AB In the low temps. of space, frozen layers of water, ammonia and methane are subject to chem. and phys. alteration by ***bombardment*** with energetic ***ions*** , electrons and photons. In the lithog. definition of submicron ***silicon*** integrated circuits, the optical elements of the lithog. system are damaged by light at high intensities. In glass fiber communication systems optical ***grating*** for wavelength selectivity can be formed by UV irradn. This small subset of radiation effects in insulators is discussed as illustrative of the range of influence of this field in current science and technol. A review with 17 refs.
ST review radiation effect insulator material; radiation effect frozen water space review; insulating hydrocarbon film radiation effect review; lithog resist ***silicon*** radiation effect review; optical fiber communication radiation effect review
IT Ice
(radiation effects in frozen layers of water, ammonia and methane in low temps. of space)
IT Hydrocarbons, properties
RL: PRP (Properties)
(radiation effects in insulating films formed by condensation of hydrocarbon mols. on cold surface)
IT Electric insulators and Dielectrics
Radiation
Radiolysis
(radiation effects in insulators and material changes assocd. with it)
IT Photolysis
(radiation effects in lithog. resist materials used in ***silicon*** integrated circuit industry)
IT Optical fibers
(radiation induced changes in optical properties of fibers used in optical communications)
IT Desorption
(photo-, radiation effects in frozen layers of water, ammonia and methane in low temps. of space)
IT Lithography
(photo-, UV, radiation effects in lithog. resist materials used in ***silicon*** integrated circuit industry)

L7 ANSWER 50 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:522555 CAPLUS
DN 125:260624
ED Entered STN: 30 Aug 1996
TI Optically induced GeO2-SiO2 fiber ***gratings*** (formation mechanism and new application)
AU Nishii, Junji; Hosono, Hideo
CS Osaka National Research Institute, Japan
SO Optronics (1996), 176, 142-148
CODEN: OPUTDD; ISSN: 0286-9659
PB Oputoronikususha
DT Journal
LA Japanese
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 75, 77
AB UV induced photochem. reactions in Ge2O-SiO2 glasses were closely related with the formation of Bragg ***gratings*** . Two kinds of color centers were formed depending on the power d. of UV light sources: GeE' center by irradn. with UV lamp (1-photon absorption) and Ge electron trapped center (GEC) induced by the excimer laser irradn. (two-photon absorption). The precursors of the former and the latter were an oxygen deficient defect causing an absorption band at 5 eV and the 4-fold-coordinated Ge. Photon-induced property changes in GeO2-SiO2 glasses prepd. by ***ion*** ***implantation*** and sputtering methods were also described.
ST germanium oxide silica fiber ***grating*** ; laser induced germanium

silicate fiber ***grating*** ; UV laser induced fiber ***grating*** ; electron trap center germanium ***silicon*** oxide
IT Electron spin resonance
(ESR of optically induced GeO2-SiO2 fiber ***gratings***)
IT Color centers
(E', optically induced GeO2-SiO2 fiber ***gratings*** and color center formation)
IT Laser radiation
(UV, optically induced GeO2-SiO2 fiber ***gratings***)
IT Glass, oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(germanium silicate, optically induced GeO2-SiO2 fiber ***gratings***)
IT ***Ions*** in solids
(***implanted*** , UV induced photochem. changes in ***ion*** ***implanted*** GeO2-SiO2 fiber ***gratings***)
IT Diffraction ***gratings***
(laser-induced, optically induced GeO2-SiO2 fiber ***gratings***)
IT Optical absorption
(two-photon, UV laser induced GeO2-SiO2 fiber ***gratings***)
IT 1310-53-8, Germanium oxide (GeO2), properties 7631-86-9, ***Silicon*** oxide (SiO2), properties
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(optically induced GeO2-SiO2 fiber ***gratings***)

L7 ANSWER 51 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:424168 CAPLUS
DN 125:128657
ED Entered STN: 18 Jul 1996
TI Imagings of picosecond-photoexcited carriers and enhanced Auger recombination rate by transient reflecting ***grating*** measurements
AU Tanaka, Takayuki; Harata, Akira; Sawada, Tsuguo
CS Dep. Applied Chem., Univ. Tokyo, Tokyo, 113, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1996), 35(6A), 3642-3647
CODEN: JAPNDE; ISSN: 0021-4922
PB Japanese Journal of Applied Physics
DT Journal
LA English
CC 76-1 (Electric Phenomena)
AB Photoinduced dynamic processes at a ***silicon*** surface were investigated by time-resolved measurements of a transient reflecting ***grating*** with 532 nm excitation and detection. The signal caused by photoexcited carriers was sepd. from signals due to thermal and acoustic effects. The carrier signal was found to be more sensitive to ion induced damages than the thermal and acoustic effect signal. Use of the carrier signal provided an inplane distribution image of near surface damage induced by helium ***ion*** ***implantation*** (energy, 200 keV; dose, 1015 atoms/cm2). The cause of the contrast formation was found to be the change of Auger recombination rate .gamma.3. The obtained .gamma.3 for intrinsic ***silicon*** was 4.0 .times. 10-29 cm6/s which was two orders of magnitude larger than the bulk value. The results indicated defects near the surface region (.apprx.100 nm) accelerated .gamma.3.
ST ***silicon*** surface photoinduced dynamic process; Auger recombination transient reflecting ***grating***
IT Carriers
Surface
(imagings of picosecond-photoexcited carriers and enhanced Auger recombination rate by transient reflecting ***grating*** measurements)
IT Recombination of electron with hole
(Auger, imagings of picosecond-photoexcited carriers and enhanced Auger recombination rate by transient reflecting ***grating*** measurements)
IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(imagings of picosecond-photoexcited carriers and enhanced Auger recombination rate by transient reflecting ***grating***

measurements)

L7 ANSWER 52 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:400061 CAPLUS
DN 125:128774
ED Entered STN: 11 Jul 1996
TI Improved a-Si1-xGex:H of large x deposited by PECVD
AU Wickboldt, Paul; Pang, Dawen; Paul, William; Chen, Joseph H.; Zhong, Fan; Cohen, J. David; Chen, Yan; Williamson, Don L.
CS Division of Applied Sciences, Harvard University, 9 Oxford Street, Cambridge, MA, 02138, USA
SO Journal of Non-Crystalline Solids (1996), 198-200(Pt. 1, Amorphous Semiconductors: Science and Technology, Pt. 1), 567-571
CODEN: JNCSBJ; ISSN: 0022-3093
PB Elsevier
DT Journal
LA English
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 75
AB By plasma enhanced CVD a-Si1-xGex:H thin films of large x were prepd. which possess optical, elec. and structural properties that are greatly improved over any yet reported. This work extends the authors' previous work on improving the properties of a-Ge:H [W.A. Turner et al., J. Appl. Phys. 67 (1990) 7430]. Steady-state photocond. measurements yield an .eta..mu..tau. of (1 to 3).times.10-7 cm2 V-1 for 1.00.gtoreq.x.gtoreq.0.75 and (6 to 10).times.10-8 cm2 V-1 for 0.75.gtoreq.x.gtoreq.0.50. Photocarrier ***grating*** measurements yield an ambipolar diffusion length much greater than previously obtained for alloys of large x. The electronic state defect d., as detd. by drive level capacitance measurements, decreases from 5.3 .times. 1016 cm-3 for x = 1.00 to 6.5 .times. 1015 cm-3 for x = 0.57. The Urbach parameter, E0, is 41 .+-. 2 meV for a-Ge:H and 45 .+-. 2 meV for the alloys. Small angle x-ray scattering measurements reveal a structure that is nearly as homogeneous as device quality a- ***Si*** :H. Much of the improvement in electronic and optical properties is assocd. with the redn. of heterogeneities in the structure. The elimination of columnar structure is attributed to increased ***ion*** ***bombardment*** during growth and conditions which yield a high electron temp. in the discharge plasma, resulting in favorable discharge chem.
ST ***silicon*** germanium amorphous hydrogenated plasma CVD; defect density amorphous hydrogenated ***silicon*** germanium; photocond amorphous hydrogenated ***silicon*** germanium
IT Semiconductor materials
(improved a-Si1-xGex:H of large x deposited by PECVD)
IT Energy level
(electronic, defect d.; in a-Si1-xGex:H of large x deposited by PECVD)
IT Vapor deposition processes
(plasma, improved a-Si1-xGex:H of large x deposited by PECVD)
IT 11148-21-3P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(amorphous, hydrogenated; improved a-Si1-xGex:H of large x deposited by PECVD)

L7 ANSWER 53 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:37355 CAPLUS
DN 124:131311
ED Entered STN: 18 Jan 1996
TI Fabrication of a variable diffraction efficiency phase mask by multiple dose ***ion*** ***implantation***
AU Erickson, L. E.; Champion, H. G.; Albert, J.; Hill, K. O.; Malo, B.; Theriault, S.; Bilodeau, F.; Johnson, D. C.
CS Inst. Microstructural Sci., Natl. Res. Council, Ottawa, ON, K1A 0R8, Can.
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1995), 13(6), 2940-3
CODEN: JVTBD9; ISSN: 0734-211X
PB American Institute of Physics
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Apodized fiber Bragg ***gratings*** show redns. in the unwanted

sidebands from those of uniform Bragg ***grating*** . A phase mask whose diffraction efficiency varied from the center to the ends was fabricated by implanting a ***grating*** pattern in a SiO2 substrate with ***Si*** ++ and wet etching in dild. HF. The phase mask diffraction efficiency vs. ion dose was measured. Using this phase mask, apodized Bragg ***gratings*** were photo-imprinted into fibers. The sidebands of the apodized fiber ***gratings*** were 26 dB below the peak of the central resonance compared to 12 dB for the uniform Bragg ***grating*** . The modeled values were 29 and 13.2 dB, resp.

ST variable diffraction efficiency phase mask silica; apodized Bragg ***grating*** optical fiber photomask

IT Diffraction ***gratings***
(apodized Bragg ***gratings*** photoimprinted into optical fibers using variable diffraction efficiency phase mask)

IT Photomasks
(fabrication of variable diffraction efficiency phase mask by multiple dose ***ion*** ***implantation***)

IT Optical diffraction
(Bragg, apodized Bragg ***gratings*** photoimprinted into optical fibers using variable diffraction efficiency phase mask)

IT 7631-86-9, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fabrication of variable diffraction efficiency phase mask by implanting ***grating*** pattern in silica substrate with ***silicon*** ion)

IT 14175-55-4, ***Silicon*** (2+), uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of variable diffraction efficiency phase mask by implanting ***grating*** pattern in silica substrate with ***silicon*** ion)

L7 ANSWER 54 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:1004256 CAPLUS
DN 124:101704
ED Entered STN: 26 Dec 1995
TI Atomic-force microscopy of submicron structures formed by ion and laser beams
AU Bukharev, A. A.; Lobkov, V. S.; Yanduganov, V. M.; Samarskii, E. A.; Berdunov, N> V.
CS Kazan. Fiz.-Tekh. Inst., Russia
SO Pis'ma v Zhurnal Tekhnicheskoi Fiziki (1995), 21(15), 72-7
CODEN: PZTFDD; ISSN: 0320-0116
PB Nauka
DT Journal
LA Russian
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB At.-force microscopy was used to ***ion*** - ***implanted*** glass on the surface of which a micro-relief was formed with pulse laser radiation. Diffraction ***gratings*** were formed on Fe+-implanted quartz glass and (for comparison) on Sb+-implanted ***Si*** . Also at.-force microscope was used to analyze the glass surface before and after Fe+ implantation.
ST quartz iron implantation atomic force microscope; laser recording microstructure ***ion*** ***implanted*** glass

IT Surface structure
(at.-force microscopy of submicron structures formed by ion and laser beams)

IT Glass, oxide
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(at.-force microscopy of submicron structures formed by ion and laser beams)

IT Microscopes
(at.-force, submicron structures formed by ion and laser beams)

IT Recording materials
(optical, at.-force microscopy of submicron structures formed by ion and laser beams)

IT 7439-89-6, Iron, uses 7440-36-0, Antimony, uses
RL: MOA (Modifier or additive use); USES (Uses)
(at.-force microscopy of submicron structures formed by ion and laser

beams)

L7 ANSWER 55 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:889405 CAPLUS
DN 123:355688
ED Entered STN: 01 Nov 1995
TI Investigation of recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures
AU Gaubas, E.; Jarasiunas, K.; Kaniava, A.; Vaitkus, J.
CS Institute Material Science and Applied Research, Vilnius University, Vilnius, 2054, Lithuania
SO Materials Research Society Symposium Proceedings (1995), 378(Defect and Impurity Engineered Semiconductors and Devices), 603-8
CODEN: MRSPDH; ISSN: 0272-9172
PB Materials Research Society
DT Journal
LA English
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 75
AB The theor. and exptl. studies of recombination processes in implanted ***Si*** structures show that a modified technique of light induced absorption of IR and microwave radiation as well as transient ***grating*** technique allows one to det. parameters of implanted layers in non-destructive way. The change of excitation depth by varying the wavelength of light sources permits to measure recombination parameters. The variation of asymptotic lifetime of excess carriers in ***ion*** ***implanted*** structure is due to simultaneous changes of bulk and surface recombination parameters, while a non-monotonic dependence of .tau.eff vs. does is detd. by competition and redistribution of recombination flows t non-homogeneous excitation. Power-law dependence of diffraction efficiency on implantation does in ***Si*** :P+ and ***Si*** :B+ enables to det. low implantation doses by contactless transient grading technique and to study process of thermal annealing.
ST argon ***ion*** ***implantation*** ***silicon*** substrate; surface recombination ***ion*** ***implantation*** model
IT Annealing
(recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures)
IT Recombination of electron with hole
(surface, recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures)
IT 7440-37-1, Argon, processes
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures)
IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures)

L7 ANSWER 56 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:805249 CAPLUS
DN 123:322853
ED Entered STN: 21 Sep 1995
TI Transient reflecting ***grating*** for sub-surface analysis: GHz ultrasonic and thermal spectroscopies and imaging
AU Sawada, T.; Harata, A.
CS Dep. Applied Chem., Univ. Tokyo, Tokyo, 113, Japan
SO Applied Physics A: Materials Science & Processing (1995), 61(3), 263-8
CODEN: APAMFC
PB Springer
DT Journal
LA English
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 72, 74, 76
AB Ps time-resolved transient reflecting ***grating*** (TRG) measurements are demonstrated for GHz ultrasonic and thermal spectroscopies of thin films and sub-surface regions of sub-.mu.m scale. The measurements should be tools for electrochem. interface monitoring and time-resolved imaging. Results are presented to show ***ion*** - ***implantation*** -induced

surface hardening and unusual thermal-diffusion behavior near a ***silicon*** surface. A model describing potential dependence of TRG responses at an electrochem. interface is proposed. An image of photocarrier d. is compared with a thermal image for a He- ***ion*** - ***implanted*** ***silicon*** wafer to demonstrate the time-resolved imaging.

ST laser transient reflecting ***grating*** subsurface analysis; film laser transient reflecting ***grating*** ; thermal ultrasonic spectroscopy TRG subsurface film; ***silicon*** transient reflecting ***grating*** subsurface analysis; electrochem interface transient reflecting ***grating***

IT Films
Heat transfer
Imaging
Laser radiation
Sound and Ultrasound
Thermal conductivity and conduction
(ultrasonic and thermal spectroscopies and imaging in laser transient-reflecting- ***grating*** sub-surface anal.)

IT Interface
(electrode-electrolyte, ultrasonic and thermal spectroscopies and imaging in laser transient-reflecting- ***grating*** sub-surface anal.)

IT Surface
(sub-, ultrasonic and thermal spectroscopies and imaging in laser transient-reflecting- ***grating*** sub-surface anal.)

IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(ultrasonic and thermal spectroscopies and imaging in laser transient-reflecting- ***grating*** sub-surface anal.)

L7 ANSWER 57 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:753710 CAPLUS
DN 123:156103
ED Entered STN: 24 Aug 1995
TI Semiconductor laser and its manufacture
IN Mukohara, Kazumasa
PA Nippon Electric Co, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01S003-18
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 07122814	A2	19950512	JP 1993-287721	19931022
	JP 2561004	B2	19961204		
PRAI	JP 1993-287721		19931022		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 07122814	ICM	H01S003-18
	IPCI	H01S0003-18 [ICM,6]

AB The laser with a diffraction ***grating*** having dopants-contg. parts whose dopants are different from dopants detg. cond. type of a semiconductor crystal. In the manuf., the phase of the ***grating*** at a light-emitting face is controlled by etching the face with ***ion*** irradn. and measuring the ***dopant*** concn. with SIMS.

ST semiconductor laser dopant measurement SIMS; mass spectrometry dopant detn laser

IT Lasers
(manuf. of semiconductor laser with controlling dopant concn. by SIMS)

IT Mass spectrometry
(secondary-ion, manuf. of semiconductor laser with controlling dopant concn. by SIMS)

IT 7440-21-3, ***Silicon*** , uses 13494-80-9, Tellurium, uses
RL: ANT (Analyte); DEV (Device component use); MOA (Modifier or additive use); ANST (Analytical study); USES (Uses)
(dopant; manuf. of semiconductor laser with controlling dopant concn.

by SIMS)
IT 7440-31-5, Tin, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(dopant; manuf. of semiconductor laser with controlling dopant concn. by SIMS)
IT 22398-80-7, Indium phosphide (InP), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(manuf. of semiconductor laser with controlling dopant concn. by SIMS)

L7 ANSWER 58 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:700389 CAPLUS
DN 123:297501
ED Entered STN: 26 Jul 1995
TI The nonlinear multimode theory of defect deformational ordered surface structure generation by strong laser beams
AU Emel'yanov, V. I.; Shlykov, Yu. G.
CS Physics Faculty, Moscow State University, Moscow, 119989, Russia
SO Laser Physics (1994), 4(1), 153-67
CODEN: LAPHEJ; ISSN: 1054-660X
PB MAIK Nauka/Interperiodica
DT Journal
LA English
CC 66-3 (Surface Chemistry and Colloids)
AB A multimode nonlinear theory of formation of surface periodic point defect deformational (DD) structures is developed. A general set of coupled nonlinear kinetic equations for DD ***gratings*** of the Fourier amplitudes is derived and reduced to a rate equation with allowance for diffusion and drift in q-space. The conditions for generation of multimode or single-mode DD structures are investigated, and periods, times of formation, and stationary amplitudes of DD ***gratings*** are detd. The theor. results are used for interpretation of previously obtained exptl. results on the generation of DD ***gratings*** in ***Si*** under ms laser irradn. and ***ion*** ***implantation*** .
ST surface defect structure laser irradn; ***silicon*** defect deformational structure irradn; ***ion*** ***implantation*** ***silicon*** defect deformational structure
IT Ion beams
(generation of defect deformational ordered surface structure by ***ion*** ***implantation***)
IT Laser radiation
Surface structure
(nonlinear multimode theory of generation of defect deformational ordered surface structure by strong laser beams)
IT 7440-21-3, ***Silicon*** , processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(generation of defect deformational ordered surface structure by ***ion*** ***implantation*** and laser irradn)

L7 ANSWER 59 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:461706 CAPLUS
DN 123:98973
ED Entered STN: 01 Apr 1995
TI Transient reflecting ***grating*** study of ***ion*** - ***implanted*** semiconductors
AU Harata, A.; Nishimura, H.; Shen, Q.; Tanaka, T.; Sawada, T.
CS Faculty Engineering, University Tokyo, Hongo, 7-3-1, Japan
SO Journal de Physique IV: Proceedings (1994), 4(C7 8th International Topical Meeting on Photoacoustic and Photothermal Phenomena, 1994), 159-62
CODEN: JPICEI; ISSN: 1155-4339
DT Journal
LA English
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 66
AB Surface modification of ***Si*** (100) wafers induced by Ar- ***ion*** ***implantation*** (***ion*** energy, 300keV; dose, 1011 - 1017 atoms/cm2) was studied using a transient reflecting ***grating*** technique. Effects of the implantation on velocity, intensity and onset time of surface acoustic waves (SAW) are discussed accompanying the acoustic anisotropy. SAW velocity dispersion was also examd. for one of

the lightly ***ion*** - ***implanted*** sample (dose, 1011
atoms/cm2).
ST argon ***ion*** ***implantation*** ***silicon*** surface SAW
IT Sound and Ultrasound
(SAW velocity; surface modification of ***silicon*** (100) wafers
induced by argon- ***ion*** ***implantation***)
IT Surface structure
(surface modification of ***silicon*** (100) wafers induced by
argon- ***ion*** ***implantation***)
IT 7440-37-1D, Argon, ions, processes
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical
process); PROC (Process); USES (Uses)
(surface modification of ***silicon*** (100) wafers induced by
argon- ***ion*** ***implantation***)
IT 7440-21-3, ***Silicon*** , properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties);
PROC (Process)
(surface modification of ***silicon*** (100) wafers induced by
argon- ***ion*** ***implantation***)

L7 ANSWER 60 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:208364 CAPLUS
DN 122:43764
ED Entered STN: 23 Nov 1994
TI Local gallium ***implantation*** with focused ***ion*** beam and
ambipolar lateral carrier transport in strained ***silicon***
-germanium/ ***silicon*** quantum wells
AU Okubo, A.; Fukatsu, S.; Shiraki, Y.
CS Res. Cent. Advanced Sci. Technol. (RCAST), Univ. Tokyo, Tokyo, 153, Japan
SO Applied Physics Letters (1994), 65(20), 2582-4
CODEN: APPLAB; ISSN: 0003-6951
PB American Institute of Physics
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB Lateral carrier diffusion in a strained Si1-xGex/ ***Si*** quantum well
(QW) is reported using a periodic two-dimensional ***grating***
geometry defined by focused ***ion*** beam local-Ga-
implantation . With systematically changing the ***grating***
period, the authors obsd. a clear dominance switch of steady-state
photoluminescence (PL) intensity between defect-related luminescence from
Ga-implanted ***grating*** stripes and PL emanating from the centered
QW region. By fitting to a simple diffusion model, the lateral diffusion
length was found to extend to several microns at low temps., whereas it
increases with temp. up to 58 K.
ST gallium implantation ***silicon*** germanium quantum well;
luminescence ***silicon*** germanium quantum well
IT Luminescence
(of gallium- ***ion*** - ***implanted*** ***Si*** -Ge/
Si quantum wells)
IT Electric current carriers
(transport of lateral carriers in Si1-xGex/ ***Si*** quantum well)
IT Semiconductor devices
(quantum-well, local Ga ***implantation*** with focused ***ion***
beam and ambipolar lateral carrier transport in strained ***Si***
-Ge/ ***Si*** quantum wells)
IT 7440-55-3D, Gallium, ***ions*** , uses
RL: MOA (Modifier or additive use); USES (Uses)
(local Ga ***implantation*** with focused ***ion*** beam and
ambipolar lateral carrier transport in strained ***Si*** -Ge/
Si quantum wells)
IT 7440-21-3, ***Silicon*** , processes 52975-45-8, Germanium 37,
silicon 63 (atomic)
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(local Ga ***implantation*** with focused ***ion*** beam and
ambipolar lateral carrier transport in strained ***Si*** -Ge/
Si quantum wells)

L7 ANSWER 61 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1995:136623 CAPLUS
DN 122:42186
ED Entered STN: 08 Nov 1994

TI Fabrication and characterization of submicron ***gratings*** written in planar silica glass with a focused ion beam.
AU Albert, Jacques; Malo, B.; Bilodeau, F.; Johnson, D. C.; Hill, K. O.; Templeton, I. M.; Brebner, J. L.
CS Communications Research Centre, Ottawa, ON, K2H 8S2, Can.
SO Proceedings of SPIE-The International Society for Optical Engineering (1994), 2213(NANOFABRICATION TECHNOLOGIES AND DEVICE INTEGRATION), 78-88
CODEN: PSISDG; ISSN: 0277-786X
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Groove patterns with submicron lateral sizes and depths of several hundreds of nanometres were defined in SiO2 glass surfaces by focused ***ion*** beam ***implantation*** and differential wet etching in HF solns. Nonperiodic arbitrary patterns can be defined and variable depth achieved through local ion dose control. The fabrication of diffractive optical elements for excimer lasers in the UV is described.
ST diffraction ***grating*** submicron silica ion beam
IT Etching
(fabrication and characterization of submicron ***gratings*** written in planar silica glass with focused ion beam.)
IT ***Ion*** beams
(***implantation*** ; fabrication and characterization of submicron ***gratings*** written in planar silica glass with focused ion beam.)
IT Diffraction ***gratings***
(submicron; fabrication and characterization of submicron ***gratings*** written in planar silica glass with focused ion beam.)
IT 60676-86-0, Vitreous silica
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(fabrication and characterization of submicron ***gratings*** written in planar silica glass with focused ion beam.)
IT 14175-55-4, ***Silicon*** 2+, processes 15456-07-2, Gold 2+, processes 22537-20-8, Beryllium 2+, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(fabrication and characterization of submicron ***gratings*** written in planar silica glass with focused ion beam.)

L7 ANSWER 62 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:119581 CAPLUS
DN 120:119581
ED Entered STN: 05 Mar 1994
TI Fast photothermal relaxation processes in metals and semiconductors studied using transient reflecting ***gratings***
AU Nishimura, Hiroyuki; Harata, Akira; Sawada, Tsuguo
CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1993), 32(11A), 5149-54
CODEN: JAPNDE; ISSN: 0021-4922
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Dynamic processes forming the transient reflecting ***gratings*** are exptl. studied in the picosecond time regime for both metals and semiconductors. The shapes of the initial parts of the ***grating*** signals were examd. with respect to the pump and probe intensities, optical configurations of polarization directions and ***ion*** ***implantation*** doses. For metals, the rising part is influenced by the temp. ***grating*** independently of the corrugation ***grating*** due to surface acoustic waves. For ***Si*** , the peak or shoulder at the initial part is attributed to the concn. ***grating*** of the photoexcited carriers, and it directly reflects the photothermal relaxation rate.
ST photothermal relaxation metal semiconductor transient ***grating***
IT Diffraction ***gratings***
(metals and semiconductors photothermal relaxation studied using transient reflecting photoexcited)
IT Thermooptical effect
(relaxation, in metals and semiconductors, from transient reflecting ***grating***)

IT 7440-37-1D, Argon, ion, properties
RL: PRP (Properties)
(photothermal relaxation processes in ***silicon*** contg., from transient reflecting ***grating***)
IT 11126-22-0, ***Silicon*** oxide
RL: PRP (Properties)
(photothermal relaxation processes in ***silicon*** with surface layers of, from transient reflecting ***grating***)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(photothermal relaxation processes in undoped and argon ***ion*** - ***implanted*** , from transient reflecting ***grating***)
IT 7429-90-5, Aluminum, properties 7440-57-5, Gold, properties
RL: PRP (Properties)
(photothermal relaxation processes in, from transient reflecting ***grating***)

L7 ANSWER 63 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:679554 CAPLUS
DN 119:279554
ED Entered STN: 25 Dec 1993
TI Laser-stimulated scattering microscope study of an ***ion*** - ***implanted*** ***silicon*** surface
AU Harata, Akira; Shen, Qing; Tanaka, Takayuki; Sawada, Tsuguo
CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers (1993), 32(8), 3633-8
CODEN: JAPNDE; ISSN: 0021-4922
DT Journal
LA English
CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 65, 73, 76
AB Surface modification of a ***Si*** single crystal induced by Ar ***ion*** ***implantation*** of a light dose condition (300 keV, 1011 atoms/cm2) was studied by using a laser-stimulated scattering microscope, whose operational principle is based on microscopic measurements of transient reflecting ***gratings*** (TRGs). One-dimensional distributions of various material parameters, velocity, onset time and attenuation coeff. of surface acoustic waves and parameters relating to thermal diffusion, thermal expansion and optical absorption, are detd. by analyzing the TRG responses measured sequentially along a line across the implanted and unimplanted regions. Some theor. aspects are presented for the empirical equation used in deducing these parameters from the TRG responses. The change in the anisotropic property of the acoustic velocity is also discussed.
ST transient reflecting ***grating*** laser scattering microscope; ***ion*** ***implanted*** ***silicon*** surface laser microscopy; acoustic wave surface ***ion*** ***implanted*** ***silicon***
IT ***Ion*** beams
(***implantation*** of, in semiconductor surface modification)
IT Microscopes
(laser-stimulated scattering, for surface studies of ***ion*** - ***implanted*** semiconductors)
IT Semiconductor materials
(surface characterization of, by laser-stimulated scattering microscope following ***ion*** ***implantation***)
IT Diffraction ***gratings***
(transient reflecting, in surface studies of ***ion*** - ***implanted*** semiconductors)
IT Sound and Ultrasound
(surface, attenuation of, on ***ion*** - ***implanted*** semiconductors)
IT Diffusion
(surface, on semiconductors following ***ion*** ***implantation*** , laser-stimulated scattering microscope for study of)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(surface characterization of, by laser-stimulated scattering microscope following ***ion*** ***implantation***)
IT 14791-69-6, Argon ion (Ar1+), properties

RL: PRP (Properties)
(surface modification by, of ***silicon*** , laser-stimulated scattering microscope study of)

L7 ANSWER 64 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:529140 CAPLUS
DN 119:129140
ED Entered STN: 18 Sep 1993
TI Lateral straggle of ***silicon*** and beryllium focused- ***ion*** beam ***implanted*** in gallium arsenide
AU Vignaud, D.; Musil, C. R.; Etchin, S.; Antoniadis, D. A.; Melngailis, J.
CS Dep. Electr. Eng. Comput. Sci., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1993), 11(3), 581-6
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
CC 76-1 (Electric Phenomena)
AB The lateral distribution of focused- ***ion*** -beam ***implanted*** ***Si*** and Be atoms was studied by measuring the elec. resistivity in ***grating*** structures. The ***gratings*** which were oriented perpendicular to the direction of the current flow were implanted with ***silicon*** and beryllium at 280 and 260 keV, resp. They were implanted into semi-insulating materials cut on and off axis, and then rapid thermal annealed. The lateral straggle was less than 100 nm for ***Si*** and equal to 190 nm for the Be implants. The std. deviation of the lateral distribution increased with the dose. This is attributed to a concn.-dependent diffusion which results in an anomalously high diffusion coeff. Comparison of the exptl. parameters of the implanted distribution with values found in std. tables or calcd. by a Monte Carlo TRIM code seems to indicate that all simulations overestimate the lateral straggle at the expense of the penetration depth.
ST implant straggle FIB implantation gallium arsenide; ***silicon*** implant straggle gallium arsenide; beryllium implant straggle gallium arsenide
IT Diffusion
(of beryllium or ***silicon*** implant in gallium arsenide, lateral straggle effect in)
IT Electric resistance
(of grated gallium arsenide, straggle of beryllium or ***silicon*** implant in relation to)
IT 1303-00-0, Gallium arsenide, uses
RL: USES (Uses)
(elec. resistivity in implant beryllium or ***silicon*** distribution study in)
IT 14175-55-4, ***Silicon*** (2+), uses 22537-20-8, Beryllium(2+), uses
RL: USES (Uses)
(lateral straggle of implant of, in semi-insulating gallium arsenide)

L7 ANSWER 65 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:223782 CAPLUS
DN 118:223782
ED Entered STN: 29 May 1993
TI Electron cyclotron resonance microwave discharge for oxide deposition using tetramethylcyclotetrasiloxane
AU Pai, C. S.; Miner, J. F.; Foo, P. D.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Journal of Applied Physics (1993), 73(7), 3531-8
CODEN: JAPIAU; ISSN: 0021-8979
DT Journal
LA English
CC 76-14 (Electric Phenomena)
Section cross-reference(s): 67
AB Results of the dielec. oxide films deposited at 300.degree. by using tetramethylcyclotetrasiloxane/oxygen chem. in a reactor with electron cyclotron resonance microwave discharge are presented. Quality oxide is deposited with an O2/tetramethylcyclotetrasiloxane flow-rate ratio > 3. The properties of the deposited films are characterized by prism ***coupler*** , IR spectroscopy, AES, RBS, and triangular voltage sweep measurements. The deposition rate using tetramethylcyclotetrasiloxane is about 4 X higher than tetraethylorthosilicate under similar processing

conditions. The authors obtained oxide films with superior quality (both material and elec. properties) at a deposition rate of 5000 .ANG./min. The step coverage of oxide is excellent when rf bias is applied on the substrate during the deposition. Trenches with aspect ratios >1.50 can be filled without voids. Details of reaction chemistries for oxide deposition in the electron cyclotron resonance reactor and the effect of ***ion*** ***bombardment*** on the oxide profile are discussed.

ST silica deposition ECR discharge tetramethylcyclotetrasiloxane oxygen

IT Vapor deposition processes
(microwave-discharge-enhanced, in dielec. oxide deposition, from tetramethylcyclotetrasiloxane-oxygen mixt.)

IT 2370-88-9, Tetramethylcyclotetrasiloxane
RL: USES (Uses)
(microwave discharge in mixt. of oxygen with, in dielec. oxide film deposition)

IT 7782-44-7, Oxygen, uses
RL: USES (Uses)
(microwave discharge in mixt. of tetramethylcyclotetrasiloxane and, in dielec. oxide deposition)

IT 11126-22-0, ***Silicon*** oxide
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(microwave discharge in tetramethylcyclotetrasiloxane-oxygen mixt. in deposition of)

L7 ANSWER 66 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1993:199003 CAPLUS

DN 118:199003

ED Entered STN: 14 May 1993

TI Laser stimulated scattering microscope: a tool for investigating modified metallic surfaces

AU Harata, Akira; Nishimura, Hiroyuki; Tanaka, Takayuki; Sawada, Tsuguo

CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan

SO Review of Scientific Instruments (1993), 64(3), 618-22
CODEN: RSINAK; ISSN: 0034-6748

DT Journal

LA English

CC 66-3 (Surface Chemistry and Colloids)
Section cross-reference(s): 56, 73, 76

AB An instrument, based on the principle of microscopic measurements by using transient reflecting ***gratings*** , was built for study of modified metallic surfaces. After holog. illumination of focused light pulses of short duration, dynamic processes were obsd. by detecting the reflecting diffraction of the synchrononously delayed probe pulse, while the sample was scanned 2-dimensionally. Distribution imaging and relaxation time (or diffusivity) imaging were demonstrated for some ***ion*** - ***implanted*** ***Si*** wafers.

ST laser scattering microscope modified metal surface; ***silicon*** ***ion*** ***implanted*** surface imaging microscopy

IT Surface
(imaging of, laser scattering microscope for)

IT Microscopes
(laser scattering, for metal or semiconductor modified surface studies)

IT Metals, properties
RL: PRP (Properties)
(surface imaging of modified, laser scattering microscope for)

IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(surface imaging of ***ion*** - ***implanted*** , laser scattering microscope for)

L7 ANSWER 67 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN

AN 1993:31348 CAPLUS

DN 118:31348

ED Entered STN: 24 Jan 1993

TI Manufacture of light-receiving device

IN Wada, Yoshiyuki

PA NEC Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01L027-14

ICS H01L021-76; H01L031-12
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 73
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04152670	A2	19920526	JP 1990-278263	19901017
PRAI	JP 1990-278263		19901017		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 04152670	ICM	H01L027-14
	ICS	H01L021-76; H01L031-12
	IPCI	H01L0027-14 [ICM,5]; H01L0021-76 [ICS,5]; H01L0031-12 [ICS,5]

AB A method for manufg. a light-receiving device useful as a photocoupler involves (1) forming insulator element-isolation regions on a semiconductor layer; (2) forming p-n junctions on the regions surrounded with the isolation regions; (3) forming an ***ion*** - ***implanted*** polycryst. ***Si*** layer on the overall surfaces; (4) patterning the ***Si*** layer to leave the layer only on the semiconductor layer having 1 p-n junction; (5) forming an ***ion*** - ***implanted*** polycryst. ***Si*** layer for a 2nd time to form an emitter layer after heat treating; (6) etching the ***Si*** layer to leave only the portion contacting the n+ or p+ region; and (7) forming a metal interconnection. A low-resistance ***Si*** film is obtained.
ST ***silicon*** film light receiving device; photocoupler ***silicon*** film
IT Photoelectric devices
(***silicon*** films for, formation of low-resistance)
IT Optical instruments
(electro-, ***couplers*** , formation of low-resistance ***silicon*** films for)
IT 7440-21-3, ***Silicon*** , uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polycryst. films, formation of low-resistance, in manuf. of light-receiving devices)

L7 ANSWER 68 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:29214 CAPLUS
DN 118:29214
ED Entered STN: 24 Jan 1993
TI Refractive-index changes in fused silica produced by heavy- ***ion*** ***implantation*** followed by photobleaching
AU Albert, J.; Malo, B.; Hill, K. O.; Johnson, D. C.; Brebner, J. L.; Leonelli, R.
CS Commun. Res. Cent., Ottawa, ON, K2H 8S2, Can.
SO Optics Letters (1992), 17(23), 1652-4
CODEN: OPLEDP; ISSN: 0146-9592
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The changes in refractive index, optical absorption, and vol. of synthetic fused silica resulting from the ***implantation*** of germanium and ***silicon*** ***ions*** at energies of 3 and 5 MeV are reported. Implantation changes the d. and generates UV color centers in the silica, which increases the refractive index at visible wavelengths by .apprx.1%. Irradn. of the implanted samples with 249-nm light from a KrF excimer laser photobleaches the color centers and reduces the index by more than 0.1%. Photobleaching is used to write a 4.3-.mu.m pitch diffraction ***grating*** in the implanted silica.
ST refraction fused silica ***ion*** ***implantation*** photobleaching; ***silicon*** germanium fused silica
IT Color centers
(in fused silica following ***ion*** ***implantation***)
IT Diffraction ***gratings***
(in ***ion*** - ***implanted*** fused silica)
IT Laser radiation
(in photobleaching of ***ion*** - ***implanted*** fused silica)
IT Optical absorption

Refractive index and Optical refraction
(of ***ion*** - ***implanted*** fused silica)
IT Bleaching
(photochem., of ***ion*** - ***implanted*** fused ***silicon***
)
IT 7440-21-3D, ***Silicon*** , ions, properties 7440-56-4D, Germanium,
ions, properties
RL: PRP (Properties)
(optical properties of fused silica implanted with)

L7 ANSWER 69 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:582622 CAPLUS
DN 117:182622
ED Entered STN: 01 Nov 1992
TI Application of laser-induced GHz surface acoustic waves to evaluate
ion - ***implanted*** semiconductors
AU Nishimura, Hiroyuki; Harata, Akira; Sawada, Tsuguo
CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes
& Review Papers (1992), 31(Suppl. 31-1), 91-3
CODEN: JAPNDE; ISSN: 0021-4922
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 65, 73
AB The transient reflecting ***grating*** method has been used to
characterize ***ion*** - ***implanted*** ***silicon*** layers
and demonstrate its usefulness for nondestructive and remote evaluation of
modified solid surfaces. The surface acoustic velocity, relaxation const.
and signal intensity were measured as functions of ion dose. The results
suggested that damage induced by implantation significantly affected the
surface properties even under light dose conditions. The subnanosecond
temporal resoln. of the present method provided successful
characterization of the implanted layers.
ST ***ion*** ***implanted*** ***silicon*** layer SAW study;
acoustic wave ***ion*** ***implanted*** layer
IT Semiconductor materials
(***ion*** - ***implanted*** layer investigation of, by
laser-induced SAW)
IT Laser radiation
(surface acoustic wave induced by, for ***ion*** - ***implanted***
layer study)
IT Sound and Ultrasound
(surface, laser-induced, in ***ion*** - ***implanted*** layer
investigation)
IT 7440-21-3, ***Silicon*** , miscellaneous
RL: MSC (Miscellaneous)
(***ion*** - ***implanted*** layer investigation of, by
laser-induced SAW)

L7 ANSWER 70 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:264757 CAPLUS
DN 116:264757
ED Entered STN: 27 Jun 1992
TI Radiative and nonradiative recombination processes in ***ion*** -
implanted semi-insulating gallium arsenide
AU Jarasiunas, K.; Petrauskas, M.; Netiksis, V.; Vaitkus, J.; Noreika, D.;
Rueckmann, I.
CS Vilnius Univ., Vilnius, Lithuania
SO Key Engineering Materials (1992), 65(Opt. Charact. Semicond.), 57-62
CODEN: KEMAEY; ISSN: 1013-9826
DT Journal
LA English
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related
Properties)
Section cross-reference(s): 76
AB Optical properties of GaAs(***Si*** +) were studied by transient
grating and luminescence techniques to reveal carriers
recombination dynamics and mechanisms in ***ion*** - ***implanted***
matters.
ST recombination process ***silicon*** implanted gallium arsenide;
luminescence ***silicon*** implanted gallium arsenide

IT Recombination of electron with hole
 (in ***silicon*** (1+)-doped gallium arsenide)
IT Luminescence
 (of ***silicon*** (1+)-doped gallium arsenide)
IT Electric current carriers
 (recombination dynamics and mechanisms in ***silicon*** (1+)-doped
 gallium arsenide)
IT 14067-07-3, ***Silicon*** (1+), properties
 RL: PRP (Properties)
 (radiative and nonradiative recombination processes in gallium arsenide
 doped with)
IT 1303-00-0, Gallium arsenide, properties
 RL: PRP (Properties)
 (radiative and nonradiative recombination processes in ***silicon***
 (1+)-doped)

L7 ANSWER 71 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:225125 CAPLUS
DN 116:225125
ED Entered STN: 31 May 1992
TI Study on damages in ***ion*** - ***implanted*** ***silicon***
 using transient reflecting ***gratings***
AU Nishimura, Hiroyuki; Harata, Akira; Sawada, Tsuguo
CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
SO Analytical Sciences (1991), 7(Suppl., Proc. Int. Congr. Anal. Sci., 1991,
 Pt. 2), 1235-6
 CODEN: ANSCEN; ISSN: 0910-6340
DT Journal
LA English
CC 75-3 (Crystallography and Liquid Crystals)
AB ***Ion*** - ***implanted*** ***Si*** layers were characterized
 by using transient reflecting ***grating*** method. The signal
 intensity and relaxation const. were measured as functions of ion dose.
 Damage induced by ***ion*** - ***implantation*** suppresses thermal
 diffusion even under a light dose condition.
ST damage ***ion*** ***implantation*** ***silicon***
IT 7440-21-3, ***Silicon*** , properties
 RL: PRP (Properties)
 (damage in ***ion*** - ***implanted*** , transient reflecting
 gratings in study of)

L7 ANSWER 72 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1992:164015 CAPLUS
DN 116:164015
ED Entered STN: 17 Apr 1992
TI Electron cyclotron resonance microwave discharge for oxide deposition
 using tetraethoxysilane
AU Pai, C. S.; Miner, J. F.; Foo, P. D.
CS AT and T Bell Lab., Murray Hill, NJ, 07974, USA
SO Journal of the Electrochemical Society (1992), 139(3), 850-6
 CODEN: JESOAN; ISSN: 0013-4651
DT Journal
LA English
CC 76-10 (Electric Phenomena)
AB Results of the dielec. oxide films deposited using tetraethoxysilane
 (TEOS) + O2 chem. in a reactor with electron cyclotron resonance (ECR)
 microwave discharge are presented. In the reactor, O2 gas is introduced
 into the plasma chamber and TEOS is introduced into the deposition
 chamber, which is downstream of the plasma. The properties of the
 deposited films are characterized by prism ***coupler*** , IR, Auger
 electron spectroscopy, Rutherford backscattering, and triangular voltage
 sweep measurements. The quality of the deposited films is found to be
 critically dependent on the ratio of O2 flow rate to the TEOS flow rate
 during the deposition. The consumption rate of TEOS in the reaction is
 high and the deposition rate is found to be proportional to the flow rate
 of TEOS. By applying addnl. RF bias on the substrate during deposition,
 the oxide profile can be modified and the reentrant angle which is
 normally obsd. on the shoulder of the profile can be eliminated. Authors
 also obsd. that ***ion*** ***bombardments*** during the deposition
 play important roles in detg. the oxide quality. The quality of the oxide
 deposited using a bias ECR reactor is good in terms of both material and
 elec. properties. In addn., the step coverage is excellent for Al lines

with high aspect ratios. The reaction chemistries for oxide deposition in the ECR reactor and the effects from impacts of energized ions during oxide deposition to the film quality and the profile are also discussed.
ST electron cyclotron resonance microwave discharge deposition; ***silicon*** dioxide deposition tetraethoxysilane oxygen
IT Infrared spectra
 (of ***silicon*** dioxide deposited by electron cyclotron resonance microwave discharge)
IT Vapor deposition processes
 (of ***silicon*** dioxide from tetraethoxysilane-oxygen mixt.)
IT 7429-90-5, Aluminum, miscellaneous
 RL: MSC (Miscellaneous)
 (deposition of silica for lines for, by electron cyclotron resonance microwave discharge)
IT 7631-86-9, ***Silicon*** dioxide, miscellaneous
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (deposition of, by electron cyclotron resonance microwave discharge, from tetraethoxysilane-oxygen mixt.)
IT 78-10-4, Tetraethoxysilane
 RL: USES (Uses)
 (electron cyclotron resonance microwave discharge in oxygen with, ***silicon*** dioxide deposition from)
IT 7782-44-7, Oxygen, uses
 RL: USES (Uses)
 (electron cyclotron resonance microwave discharge in tetraethoxysilane with, ***silicon*** dioxide deposition from)

L7 ANSWER 73 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:546031 CAPLUS
DN 115:146031
ED Entered STN: 05 Oct 1991
TI Fabrication and characteristics of gallium arsenide-aluminum gallium arsenide tunable laser diodes with DBR and phase-control sections integrated by compositional disordering of a quantum well
AU Hirata, Takaaki; Maeda, Minoru; Suehiro, Masayuki; Hosomatsu, Haruo
CS Cent. Res. Lab., Opt. Meas. Technol. Dev. Co. Ltd., Musashino, 180, Japan
SO IEEE Journal of Quantum Electronics (1991), 27(6), 1609-15
 CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB GaAs-AlGaAs GRIN-SCH-SQW tunable DBR laser diodes are fabricated by EB lithog., ***ion*** ***implantation*** , and two-step MOVPE growth. Active and passive waveguides are monolithically integrated by the compositional disordering of quantum-well heterostructures using ***silicon*** ***ion*** ***implantation*** . First-order ***gratings*** and rib waveguides are adopted with EB lithog. to improve lasing characteristics, and they have wide application to photonic integrated circuits. Waveguide losses of partially disordered GRIN-SCH-SQW passive waveguides are as low as 4.4 cm-1 at the lasing wavelength. A narrow linewidth as low as 560 kHz and a frequency tuning of more than 2.9 THz are obtained. The results show that this fabrication process is useful for photonic integrated circuits.
ST aluminum gallium arsenide laser device structure
IT Lasers
 (aluminum gallium arsenide-gallium arsenide, tunable distributed Bragg-reflector)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous
 RL: USES (Uses)
 (lasers from aluminum gallium arsenide and, tunable distributed Braggs reflector)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous 7440-66-6, Zinc, uses and miscellaneous
 RL: USES (Uses)
 (lasers from aluminum gallium arsenide-gallium arsenide doped with, tunable distributed Bragg reflector)
IT 106070-09-1, Aluminum gallium arsenide (Al0.3Ga0.7As) 106804-30-2, Aluminum gallium arsenide (Al0.6Ga0.4As)
 RL: DEV (Device component use); USES (Uses)
 (lasers from gallium arsenide in, distributed Bragg reflector)

L7 ANSWER 74 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:438137 CAPLUS
DN 115:38137
ED Entered STN: 27 Jul 1991
TI Novel microscopy using stimulated light scattering by laser-induced transient reflecting ***gratings*** on metallic surfaces
AU Harata, Akira; Sawada, Tsuguo
CS Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
SO Applied Physics Letters (1991), 58(17), 1839-41
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A novel microscopic method, based on the technique of laser-induced transient reflecting ***gratings*** , is proposed to monitor ***ion*** ***implantation*** in ***silicon*** by noncontact and nondestructive ways. Some unique advantages of this technique, such as highly sensitivity to ion dose and potential real time imaging capability, are demonstrated.
ST microscopy light scattering laser induced ***grating*** ; ***silicon*** light scattering laser induced ***grating*** ; metal light scattering laser induced ***grating***
IT Diffraction ***gratings***
(light scattering by laser-induced transient reflecting, microscopy using stimulated)
IT Light
(scattering of, by laser-induced transient reflecting ***gratings*** on metallic surfaces, microscopy using)
IT Laser radiation, chemical and physical effects
(transient reflecting ***gratings*** on metallic surfaces induced by, microscopy using stimulated light scattering by)
IT Microscopy
(using stimulated light scattering by laser-induced transient reflecting ***gratings*** on metallic surfaces)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(light scattering by laser-induced transient reflecting ***gratings*** on surface of, microscopy using)

L7 ANSWER 75 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1991:175632 CAPLUS
DN 114:175632
ED Entered STN: 03 May 1991
TI Investigation of the dynamics of pulsed laser annealing of ***ion*** - ***implanted*** ***silicon*** by the picosecond transient ***grating*** technique
AU Baltramiejunas, R.; Gaska, R.; Kuokstis, E.; Netiksis, V.; Petrauskas, M.
CS Vilnius, USSR
SO Physical Research (1990), 13(EPM '89, Energy Pulse Part. Beam Modif. Mater.), 220-2
CODEN: PHSREL; ISSN: 0863-4947
DT Journal
LA English
CC 76-1 (Electric Phenomena)
Section cross-reference(s): 75
AB The aim of the present paper is to investigate the influence of As ***ion*** ***implantation*** and the following nanosecond laser annealing (NLA) on the relaxation characteristics of nonequil. carriers (NC) in ***Si*** crystals. The time probing technique of the decay of dynamic diffraction ***gratings*** (DG) induced by the interference field of laser radiation was used to investigate relaxation of NC.
ST implantation annealing ***silicon*** transient ***grating*** method; annealing ***silicon*** picosecond transient ***grating*** technique; carrier relaxation nonequil method
IT Electric current carriers
(nonequil., relaxation of, in ***silicon*** , picosecond transient ***grating*** technique in study of)
IT 7440-38-2D, Arsenic, ***ions*** , uses and miscellaneous
RL: USES (Uses)
(***implantation*** of, in ***silicon*** , picosecond transient ***grating*** technique in study of)

IT 7440-21-3, ***Silicon*** , uses and miscellaneous
RL: USES (Uses)
(***ion*** ***implantation*** and laser annealing of, picosecond transient ***grating*** technique in study of)

L7 ANSWER 76 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:602428 CAPLUS
DN 113:202428
ED Entered STN: 23 Nov 1990
TI Formation of surface inversion layer in fluorine(1+)-implanted n-type ***silicon***
AU Chu, C. H.; Chen, L. J.; Hwang, H. L.
CS Dep. Mater. Sci. Eng., Natl. Tsing Hua Univ., Hsinchu, Taiwan
SO Journal of Crystal Growth (1990), 103(1-4), 188-96
CODEN: JCRGAE; ISSN: 0022-0248
DT Journal
LA English
CC 76-3 (Electric Phenomena)
AB Influences of fluorine ***ion*** ***implantation*** on the elec. properties of n-type ***silicon*** have been investigated by electron beam induced current (EBIC), and Hall and MOS high-frequency capacitance-voltage (HFCV) measurements. A ***grating*** mask was used to delineate the implantation region so that the F+-implanted and unirradiated areas were located in the same Al/n-type ***Si*** Schottky diode region. EBIC images, obtained with different electron beam energies, normal and parallel to the diode surface, and EBIC collection efficiencies in the implanted and unirradiated areas were recorded. By fitting data of energy-dependent EBIC collection efficiency into the theor. EBIC model of Schottky diode, the thickness of the metal layer, depletion layer width, minority carrier diffusion length in the substrate and EBIC collection efficiency in the deletion region were detd. The minority carrier recombination in the fluorine implanted area was found to be higher than that of the blank ***Si*** area under Schottky contact. Outside the Schottky contact, an inversion layer was obsd. to form at the surface of the implanted area. The structural perfection of the F+ implanted area was investigated by cross-sectional TEM (XTEM). The p-type characterization in the surface layer of the F+ implanted area was also confirmed by the Hall and HFCV measurements.
ST surface inversion layer fluorine implanted ***silicon***
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(surface inversion layer formation in fluorine- ***ion*** - ***implanted*** n-type)
IT 14701-13-4, Fluorine(1+), uses and miscellaneous
RL: USES (Uses)
(surface inversion layer formation in n-type ***silicon*** implanted with)

L7 ANSWER 77 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:432837 CAPLUS
DN 113:32837
ED Entered STN: 21 Jul 1990
TI Interdiffusion and conversion of indium phosphide/indium gallium arsenide(InP/In0.53Ga0.47As) superlattices induced by p-type dopants
AU Schwarz, S. A.; Hwang, D. M.; Mei, P.; Schwartz, C. L.; Werner, J.; Stoffel, N. G.; Bhat, R.; Chen, C. Y.; Ravi, T. S.; Koza, M.
CS Bellcore, Red Bank, NJ, 07701-7040, USA
SO Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and Films (1990), 8(3, Pt. 2), 2997-3001
CODEN: JVTAD6; ISSN: 0734-2101
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 75
AB Zn diffusion into an unstrained InP/In0.53Ga0.47As superlattice has been obsd. to result in the formation, first, of a strained layer In1-xGaxP/In1-xGaxAs superlattice due to the selective diffusion of In and Ga, then a Zn3P2/In1-xGaxAs superlattice due to "kickout" of the cations, and finally a Zn3P2/Zn3As2 superlattice. The lateral confinement of Zn induced interdiffusion and conversion is examd. by diffusing through a 3 .mu.m period Si3N4 grafting. The effects of Cd diffusion and Be ***ion*** ***implantation*** are also examd. Organometallic chem.

vapor deposited InP/In0.53Ga0.47As superlattices were diffused at 600 or 650.degree. in sealed ampules with Zn3As2 or Cd3P2 powder as the dopant source. Samples were examd. by secondary ion mass spectrometry and anal. electron microscopy. In the ***grating*** expt., cation homogenization resulted in the formation of a uniform unconfined strained layer superlattice with superior surface quality in the regions protected by Si3Nf. Zn3P2 superlattice conversion was confined within the ***grating*** window regions; however, a thick, unconfined Zn3P2 layer was obsd. to form below the superlattice. A Ga concn. spike was present between this thick Zn3P2 layer and the underlying substrate. Cd was less efficient at intermixing the superlattice, owing largely to its relative low soly. and diffusion coeff. Partial intermixing was induced by Be implantation, with Be segregation into the InP layers obsd. near the implant peak.

ST indium phosphide superlattice zinc diffusion; gallium indium arsenide superlattice; interdiffusion conversion superlattice; cadmium doping beryllium implantation superlattice

IT Diffusion
(of zinc or cadmium, in gallium indium arsenide-indium phosphide superlattices, conversion in relation to)

IT Diffusion
(inter-, in gallium indium arsenide-indium phosphide superlattices)

IT 7440-43-9, Cadmium, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(diffusion of, in gallium indium arsenide-indium phosphide superlattice)

IT 7440-55-3, Gallium, properties 7440-66-6, Zinc, properties 7440-74-6, Indium, properties
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(diffusion of, in gallium indium arsenide-indium phosphide superlattices)

IT 55965-40-7, Cadmium phosphide
RL: USES (Uses)
(formation of superlattice contg., during cadmium diffusion in gallium indium arsenide-indium phosphide superlattice)

IT 56450-43-2, Zinc arsenide
RL: USES (Uses)
(formation of superlattice contg., in indium gallium arsenide-indium phosphide system, during zinc diffusion)

IT 106312-00-9P, Gallium indium phosphide ((Ga,In)P)
RL: FORM (Formation, nonpreparative); PREP (Preparation)
(formation of, in conversion of indium gallium arsenide-indium phosphide superlattices)

IT 7440-41-7, Beryllium, uses and miscellaneous
RL: USES (Uses)
(implantation of, in gallium indium arsenide-indium phosphide superlattice)

IT 12033-89-5, ***Silicon*** nitride, properties
RL: PRP (Properties)
(protection by, of indium phosphide-gallium indium arsenide superlattice)

IT 22398-80-7, Indium phosphide, properties
RL: PRP (Properties)
(superlattice of, with gallium indium arsenide, interdiffusion and conversion in)

IT 106097-59-0, Gallium indium arsenide (Ga0.47In0.53As)
RL: USES (Uses)
(superlattice of, with indium phosphide, interdiffusion and conversion in)

L7 ANSWER 78 OF 187 CAPLUS

AN 1989:643487 CAPLUS

DN 111:243487

ED Entered STN: 23 Dec 1989

TI A novel GRIN-SCH-SQW laser diode monolithically integrated with low-loss passive waveguides

AU Hirata, Takaaki; Maeda, Minoru; Hosomatsu, Haruo

CS Cent. Res. Lab., Opt. Meas. Technol. Dev. Co., Ltd., Musashino, 180, Japan

SO Japanese Journal of Applied Physics, Part 2: Letters (1989), 28(8), L1429-L1432
CODEN: JAPLD8; ISSN: 0021-4922

DT Journal

LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB A fabrication process was proposed for monolithic multielement graded-index (GRIN) sep.-confinement heterostructure (SCH) single quantum well (SQW) laser diodes, and the performance was demonstrated of a monolithically integrated passive waveguide laser as compared with a conventional laser fabricated under the same procedures. This process, which is based on ***Si*** ***ion*** ***implantation*** and 2-step metalorg. VPE growth, is suitable for integrating optical elements like ***gratings*** and rib waveguides. The catastrophic optical damage level of the window structure laser fabricated by this process is >1.3 W in pulsed operation.
ST laser ***silicon*** quantum well waveguide
IT Lasers
(aluminum gallium arsenide/gallium arsenide, integrated-waveguide, fabrication of)
IT Luminescence
(of aluminum gallium arsenide/gallium arsenide single quantum well-integrated waveguide)
IT Epitaxy
(vapor-phase, metalorg., fabrication of aluminum gallium arsenide/gallium arsenide waveguide lasers by)
IT 7440-21-3D, ***Silicon*** , ***ions*** , uses and miscellaneous
RL: USES (Uses)
(***implantation*** of, in fabrication of aluminum gallium arsenide/gallium arsenide waveguide lasers)
IT 106070-09-1, Aluminum gallium arsenide (Al0.3Ga0.7As) 106804-30-2, Aluminum gallium arsenide (Al0.6Ga0.4As)
RL: DEV (Device component use); USES (Uses)
(lasers contg., fabrication of integrated-waveguide)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous 37382-15-3, Aluminum gallium arsenide (Al0-1Ga0-1As)
RL: PRP (Properties)
(lasers from, fabrication of integral-waveguide)

L7 ANSWER 79 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:636568 CAPLUS
DN 111:236568
ED Entered STN: 23 Dec 1989
TI Concepts for thin-film gallium arsenide concentrator cells
AU Spitzer, M. B.; Gale, R. P.; McClelland, R.; King, B.; Dingle, J.; Morrison, R.
CS Kopin Corp., Taunton, MA, 02780, USA
SO Proceedings of the Intersociety Energy Conversion Engineering Conference (1989), 24th(Vol. 2), 785-90
CODEN: PIECDE; ISSN: 0146-955X
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75, 76
AB The development of advanced GaAs concentrator solar cells is described with emphasis on the use of CLEFT (cleavage of lateral epitaxial films for transfer) processes for the formation of thin-film structures and back surface grids. Patterned junction development is described; such junctions are useful in back surface application requiring point-contacts, ***grating*** structures, and inter-digitated back contacts. Concentrator solar cells with grids on the front and back surfaces fabricated using CLEFT are reported for the first time; the cells are 4 .mu.m thick and are bonded to glass covers for support. An energy conversion efficiency of 18.8% (air mass 0) was attained by a CLEFT concentrator operating at 18.5 suns.
ST gallium arsenide concentrator solar cell; crystal growth CLEFT process solar cell
IT Luminescence
(lifetime of, of gallium arsenide solar cells, thickness and doping effects on)
IT Epitaxy
(of gallium arsenide films, by cleavage of lateral epitaxial films for transfer process, solar cell fabrication by)
IT Photoelectric devices, solar

(concentrators, gallium arsenide, fabricated by cleavage of lateral epitaxial films for transfer process)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous 7440-41-7, Beryllium, uses and miscellaneous 7440-66-6, Zinc, uses and miscellaneous
RL: USES (Uses)
(gallium arsenide ***doped*** with, by ***ion*** ***implantation*** , solar cell performance in relation to)
IT 37382-15-3P, Aluminum gallium arsenide [(Al,Ga)As] 1303-00-0P, Gallium arsenide, uses and miscellaneous
RL: PREP (Preparation)
(photoelec. solar cells, prepd. by cleavage of lateral epitaxial films for transfer process)

L7 ANSWER 80 OF 187 CAPLUS
AN 1989:488575 CAPLUS
DN 111:88575
ED Entered STN: 03 Sep 1989
TI Study of carrier dynamics and radiation defects in ***ion*** - ***implanted*** ***silicon*** by transient ***grating*** techniques
AU Jonikas, L.; Jarasiunas, K.; Vaitkus, J.
CS V. Kapsukas State Univ., Vilnius, SU-232000, USSR
SO Physica Status Solidi A: Applied Research (1989), 112(1), 375-80
CODEN: PSSABA; ISSN: 0031-8965
DT Journal
LA English
CC 76-5 (Electric Phenomena)
Section cross-reference(s): 75
AB Investigations of photoelec. properties of ***ion*** - ***implanted*** ***Si*** were performed by the optical-transient ***grating*** technique. A lowering of carrier and thermal diffusion as well as faster recombination are obsd. The existence of elec. active radiation defects in a region essentially exceeding the projected mean range of ions is proved by measurements of both light diffraction and photocond.
ST photocond ***ion*** ***implanted*** ***silicon*** ; carrier ***ion*** ***implanted*** ***silicon*** ; defect ***ion*** ***implanted*** ***silicon*** ; recombination ***ion*** ***implanted*** ***silicon*** ; light diffraction ***ion*** ***implanted*** ***silicon***
IT Electric current carriers
(dynamics of, in phosphorus- ***ion*** - ***implanted*** ***silicon***)
IT Photoconductivity and Photoconduction
Recombination of electron with hole
(of ***silicon*** after phosphorus ***ion*** ***implantation***)
IT 7723-14-0D, Phosphorus, ions, properties
RL: PRP (Properties)
(current carrier dynamics and radiation defects in ***silicon*** implanted with)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(photocond. and radiation defects in ***ion*** - ***implanted***)

L7 ANSWER 81 OF 187 CAPLUS
AN 1989:486862 CAPLUS
DN 111:86862
ED Entered STN: 03 Sep 1989
TI DBR laser with nondynamic plasma ***grating*** formed by focused ***ion*** beam ***implanted*** ***dopants***
AU Boenke, Myra M.; Wu, M. C.; Wang, Shyh; Clark, William M., Jr.; Stevens, Eugene H.; Utlaut, Mark W.
CS Dep. Electr. Eng. Comput. Sci., Univ. California, Berkeley, CA, 94720, USA
SO IEEE Journal of Quantum Electronics (1989), 25(6), 1294-302
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A static plasma ***grating*** was demonstrated exptl. in a large-optical-cavity focused- ***ion*** -beam- ***implanted***

distributed-Bragg-reflector (FIB-DBR)GaAlAs/GaAs laser diode. The ***grating*** is formed by implanting stripes of dopants with a FIB. The dopants ionize to form periodic fluctuations in the carrier concn. which, through the Kramers-Kronig relations, form an index ***grating*** . A model of the ***grating*** strength for optimization of the laser design is developed and presented. The computed results show that .kappa. can be increased by more than an order of magnitude over the 15 cm-1 estd. exptl. Therefore, FIB-DBR (or -DFB) lasers with performance comparable to that of conventional DBR (or DFB) lasers can be expected.
ST laser nondynamic plasma ***grating*** ; aluminum gallium arsenide laser plasma ***grating***
IT Diffraction ***gratings***
(plasma, laser with nondynamic, formed by focused ***ion*** beam ***implantation***)
IT Lasers
(semiconductor, with nondynamic plasma ***grating*** , focused ***ion*** beam ***implantation*** in fabrication of)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous
RL: USES (Uses)
(lasers from aluminum gallium arsenide and, with nondynamic plasma ***grating***)
IT 106070-09-1, Aluminum gallium arsenide (Al0.3Ga0.7As) 106070-12-6, Aluminum gallium arsenide (Al0.15Ga0.85As)
RL: DEV (Device component use); USES (Uses)
(lasers from gallium arsenide and, with nondynamic plasma ***grating***)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous
RL: USES (Uses)
(lasers with nondynamic plasma ***grating*** formed by focused ***ion*** beam ***implanted***)

L7 ANSWER 82 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:124782 CAPLUS
DN 110:124782
ED Entered STN: 03 Apr 1989
TI Reflectivity and dynamic ***gratings*** in implanted ***silicon*** induced by picosecond laser pulses
AU Galeckas, A.; Netiksis, V.; Petrauskas, M.; Vaitkus, J.
CS Vilnius State Univ., Vilnius, SU-232 054, USSR
SO Physica Status Solidi B: Basic Research (1988), 150(2), 743-8
CODEN: PSSBBD; ISSN: 0370-1972
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB The relaxation processes are investigated in high-excited P+- and B+-implanted ***Si*** using transient-reflectivity and dynamic ***grating*** methods in the ps time domain. The dependence of the optical parameters of ***ion*** - ***implanted*** ***Si*** vs. ***implantation*** dose are presented. The temporal behavior of the nonequil. charge carriers obtained from the induced-reflectivity change and ***grating*** decay measurements was analyzed. The reflectivity decay process is always faster than the corresponding ***grating*** decay process. By the numerical calcns. the surface recombination velocity, S = 4 .times. 104 cm/s, was estd. The influence of the implantation process on the effective carrier lifetime is discussed.
ST relaxation nonlinear boron implanted ***silicon*** ; phosphorus implanted ***silicon*** nonlinear reflection; boron implanted ***silicon*** nonlinear reflection
IT Diffraction ***gratings***
(in ***silicon*** implanted with phosphorus and boron cations)
IT Optical reflection
(nonlinear, of ***silicon*** implanted with phosphorus and boron cations)
IT Electric current carriers
(nonequil., relaxation of, in ***silicon*** implanted with phosphorus and boron cations)
IT Optical nonlinear property
(reflection, of ***silicon*** implanted with phosphorus and boron cations)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous

RL: USES (Uses)
(nonlinear optical reflectivity and dynamic ***gratings*** in ***ion*** - ***implanted***)
IT 14594-80-0, Boron(1+), uses and miscellaneous 16427-80-8, Phosphorus(1+), uses and miscellaneous
RL: USES (Uses)
(nonlinear optical reflectivity and dynamic ***gratings*** in ***silicon*** implanted with)

L7 ANSWER 83 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:123976 CAPLUS
DN 110:123976
ED Entered STN: 03 Apr 1989
TI Transient ***gratings*** in metrology of semiconductor parameters and optoelectronic devices
AU Jarasiunas, K.; Vaitkus, J.
CS Dep. Phys., Vilnius State Univ., Vilnius, SU-232 054, USSR
SO Physica Status Solidi B: Basic Research (1988), 150(2), 879-84
CODEN: PSSBBD; ISSN: 0370-1972
DT Journal; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
AB A review with 26 refs. The origin of optical nonlinearity and its magnitude were investigated in different semiconductors and structures, as CdSe, GaAs, InSb, ***Si*** (pure, ***ion*** - ***implanted*** , heavily ***doped*** or amorphous) MQWS. The usefulness of the transient ***grating*** technique studies peculiarities of the nonequil. processes in strong elec. fields, at high excitation levels, or reveals the presence and transformation of defects. Some novel possibilities for the deflection of a laser beam and its modulation are demonstrated.
ST metrol semiconductor transient ***grating*** review; optoelectronic device metrol ***grating*** review
IT Semiconductor materials
(transient ***gratings*** in metrol. of)
IT Measurement
(transient ***gratings*** in, of semiconductor parameters and optoelectronic devices)
IT Diffraction ***gratings***
(transient, in metrol. of semiconductor parameters and optoelectronic devices)
IT Optical instruments
(electro-, transient ***gratings*** in metrol. of)

L7 ANSWER 84 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1988:519191 CAPLUS
DN 109:119191
ED Entered STN: 01 Oct 1988
TI Gallium arsenide/gallium aluminum arsenide distributed Bragg reflector laser with a focused ***ion*** beam, low dose ***dopant*** ***implanted*** ***grating***
AU Wu, M. C.; Boenke, M. M.; Wang, S.; Clark, W. M., Jr.; Stevens, E. H.; Utlaut, M. W.
CS Dep. Electr. Eng. Comp. Sci., Univ. California, Berkeley, CA, 94720, USA
SO Applied Physics Letters (1988), 53(4), 265-7
CODEN: APPLAB; ISSN: 0003-6951
DT Journal
LA English
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The performance is reported of a GaAs/GaAlAs distributed Bragg reflector (DBR) laser using a focused ***ion*** beam ***implanted*** ***grating*** (FIB-DBR). Stripes of ***Si*** ++ with a period of 2300 .ANG. and a dose .apprx.1014 cm-2 are directly implanted into the passive large optical cavity layer to provide the distributed feedback. Surface-emitting light from the 2nd-order ***grating*** is obsd. Threshold current of 110 mA and single DBR mode operation from 20 to 40.degree. are obtained. The wavelength tuning rate with temp. is 0.8 .ANG./.degree.. The coupling coeff. is estd. to be 15 cm-1. The results show that FIB technol. is practical for distributed feedback and DBR

lasers and optoelectronic integrated circuits.
ST aluminum gallium arsenide Bragg reflector laser; ***silicon*** implanted ***grating*** laser
IT Lasers
(aluminum gallium arsenide-gallium arsenide, distributed Bragg reflector, with dopant implanted ***grating***)
IT Diffraction ***gratings***
(dopant implanted, for aluminum gallium arsenide-gallium arsenide distributed Bragg reflector laser)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous
RL: USES (Uses)
(lasers from aluminum gallium arsenide and, distributed Bragg reflector)
IT 14175-55-4, ***Silicon*** (2+), uses and miscellaneous
RL: USES (Uses)
(lasers from aluminum gallium arsenide-gallium arsenide with ***grating*** doped with, distributed Bragg reflector)
IT 106070-09-1, Aluminum gallium arsenide (Al0.3Ga0.7As) 106070-12-6, Aluminum gallium arsenide (Al0.15Ga0.85As)
RL: DEV (Device component use); USES (Uses)
(lasers from gallium arsenide and, distributed Bragg reflector)

L7 ANSWER 85 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1988:463914 CAPLUS
DN 109:63914
ED Entered STN: 19 Aug 1988
TI Study of nanosecond laser annealing of ***ion*** - ***doped*** ***silicon*** by the method of picosecond lattices
AU Baltramejunas, R.; Gaska, R.; Kuokstis, E.; Natiksis, V.; Petrauskas, M.
CS USSR
SO Lazery i Optich. Nelineinost, Vil'nyus (1987) 230-5
From: Ref. Zh., Fiz. (A-Zh.) 1988, Abstr. No. 2L1412
DT Journal
LA Russian
CC 73-10 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Title only translated.
ST laser annealing ***ion*** ***implantation*** ***silicon*** ; diffraction lattice ***ion*** ***implantation*** ***silicon***
IT Laser radiation, chemical and physical effects
(annealing by, of ***ion*** - ***implanted*** ***silicon***)
IT ***Ion*** beams
(***implantation*** of, in ***silicon*** , laser annealing in relation to)
IT Diffraction ***gratings***
(laser-induced, picosecond, in laser-annealed ***ion*** - ***implanted*** ***silicon***)
IT 7440-21-3, ***Silicon*** , properties
RL: PRP (Properties)
(laser annealing of ***ion*** - ***implanted***)

L7 ANSWER 86 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1988:194832 CAPLUS
DN 108:194832
ED Entered STN: 28 May 1988
TI Fabrication of index-guided aluminum gallium arsenide multi-quantum well lasers and ***grating*** structures by ***silicon*** -induced disordering
AU Nakashima, Hisao; Ishida, Koji
CS Inst. Sci. Ind. Res., Osaka Univ., Ibaraki, 567, Japan
SO Optoelectronics--Devices and Technologies (1987), 2(2), 235-45
CODEN: ODTEEG; ISSN: 0912-5434
DT Journal; General Review
LA English
CC 73-0 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB A review with 24 refs. is given on the application of compositional disordering of multiquantum yield (MQW) to the fabrication of transverse mode controlled AlGaAs MQW lasers and submicron ***grating*** structures using conventional and focused ***ion*** beam ***implantation*** technique. This simple, controllable and reliable technique is expected to be very useful for making optoelectronic

integrated circuits.
ST review aluminum gallium arsenide laser ***grating***
IT Diffraction ***gratings***
Lasers
(aluminum gallium arsenide, fabrication by ***silicon*** -induced disordering)
IT Order
(disorder, ***silicon*** -induced, in fabrication of aluminum gallium arsenide lasers and ***grating*** structures)
IT 7440-21-3, ***Silicon*** , uses and miscellaneous
RL: USES (Uses)
(disordering induced by, in fabrication of aluminum gallium arsenide lasers and ***grating*** structures)
IT 37382-15-3, Aluminum gallium arsenide ((Al,Ga)As)
RL: PRP (Properties)
(lasers and ***grating*** structures, fabrication by ***silicon*** -induced disordering)

L7 ANSWER 87 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:408196 CAPLUS
DN 107:8196
ED Entered STN: 11 Jul 1987
TI XPS and SSIMS (FABMS) studies on silane treated filler surfaces
AU Garbassi, F.; Occhiello, E.; Bastioli, C.; Romano, G.; Brown, A.
CS Ist. Guido Donegani S.p.A., Cent. Ric. Novara, Novara, 28100, Italy
SO Compos. Interfaces, Proc. Int. Conf., 1st (1986), 241-50. Editor(s): Ishida, Hatsuo; Koenig, Jack L. Publisher: North-Holland, New York, N. Y.
CODEN: 55VAAZ
DT Conference
LA English
CC 37-6 (Plastics Manufacture and Processing)
AB Using XPS and static secondary- ***ion*** mass spectrometry (fast-atom ***bombardment*** mass spectroscopy), a qual. and semiquant. picture was obtained of the bonding of 3-(methacryloyloxy)propyltrimethoxysilane to E-glass, alumina and quartz. On E-glass and alumina the silane did not form significant amts. of polymethacrylate. The coverage was higher on E-glass, probably as a consequence of the higher amt. of polar groups. One of the silanol OH groups was often not used in the formation of ***Si*** -O- ***Si*** bridges with the substrate or other silane mols. In quartz substantial polymd. silane was noted. Probably polymn. was responsible for the high coverage found on quartz, where there was also obsd. a distinct excess of nonoxygen-bonded carbon in the XPS C-1s spectrum of the silane, suggesting that polar functions stayed preferentially below the surface to minimize surface energy.
ST silane ***coupler*** glass XPS; quartz silane ***coupler*** polymn; alumina silane ***coupler*** mass spectra; methacrylate silane ***coupler*** polymn
IT Polymerization
(of methacryloyloxysilane on filler surfaces, XPS and mass spectroscopic studies of)
IT Coupling agents
(silane, glass, alumina and quartz surfaces treated with, XPS and mass spectroscopy study of)
IT 2530-85-0, 3-(Methacryloyloxy)propyltrimethoxysilane
RL: USES (Uses)
(glass, quartz and alumina surfaces treated with, XPS and mass spectroscopic studies on)
IT 1344-28-1, Alumina, properties 14808-60-7, Quartz, properties
RL: PRP (Properties)
(silane-treated, XPS and mass spectroscopic studies of)

L7 ANSWER 88 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1987:204898 CAPLUS
DN 106:204898
ED Entered STN: 13 Jun 1987
TI Fabrication of submicron ***grating*** patterns using compositional disordering of aluminum gallium arsenide-gallium arsenide superlattices by focused ***silicon*** ***ion*** beam ***implantation***
AU Ishida, Koji; Miyauchi, Eizo; Morita, Tetsuo; Takamori, Takeshi; Fukunaga, Toshiaki; Hashimoto, Hisao; Nakashima, Hisao
CS Optoelectron. Jt. Res. Lab., Kawasaki, 211, Japan
SO Japanese Journal of Applied Physics, Part 2: Letters (1987), 26(4),

L285-L287
CODEN: JAPLD8
DT Journal
LA English
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Submicron ***grating*** patterns (0.4 .mu.m period) were fabricated in AlGaAs-GaAs superlattices (SL's) using compositional disordering of the SL's by focused ***Si*** ***ion*** beam ***implantation*** and subsequent annealing. The ***grating*** structure which is composed of preserved SL and mixed (disordered) regions was confirmed by SEM and scanning Auger microscopic observations.
ST aluminum gallium arsenide superlattice ***grating*** ; submicron ***grating*** superlattice compn disordering
IT Diffraction ***gratings***
(fabrication of, with submicron patterns using compositional disordering in superlattice by ***silicon*** ***ion*** beam ***implantation***)
IT Order
(disorder, compn. of, in superlattices, submicron ***grating*** patterns in relation to)
IT 14067-07-3, ***Silicon*** (1+), uses and miscellaneous
RL: USES (Uses)
(compositional disordering of superlattice by implantation with, fabrication of submicron ***grating*** patterns in relation to)
IT 12774-40-2
RL: PRP (Properties)
(submicron ***grating*** pattern fabrication in superlattice contg., by ***silicon*** ***ion*** ***implantation*** induced compositional disordering)
IT 1303-00-0, Gallium arsenide, uses and miscellaneous
RL: USES (Uses)
(submicron ***grating*** pattern fabrication in superlattice of aluminum gallium arsenide with, by ***silicon*** ***ion*** ***implantation*** induced compositional disordering)

L7 ANSWER 89 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:616831 CAPLUS
DN 105:216831
ED Entered STN: 13 Dec 1986
TI Crystalline films on amorphous substrates by zone melting and surface-energy-driven grain growth in conjunction with patterning
AU Smith, Henry I.; Geis, M. W.; Thompson, C. V.; Chen, C. K.
CS Dep. Electr. Eng. Comput. Sci., Massachusetts Inst. Technol., Cambridge, MA, 02139, USA
SO Materials Research Society Symposium Proceedings (1986), 53(Semicond. Insul. Thin Film Transistor Technol.), 3-13
CODEN: MRSPDH; ISSN: 0272-9172
DT Journal; General Review
LA English
CC 75-0 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76
AB A review with 30 refs. is given on two approaches to prep. oriented cryst. films on amorphous substrates; zone-melting recrystn. (ZMR) and surface-energy-driven grain growth (SEDGG). In both approaches patterning can be employed either to establish orientation or to control the location of defects. ZMR has been highly successful for the growth of ***Si*** films on oxidized ***Si*** substrates, but its applicability is limited by the high temps. required. SEDGG has been investigated as a potentially universal, low temp. approach. It has been demonstrated in ***Si*** , Ge, and Au. Surface ***gratings*** favor the growth of grains with a specific in-plane orientation. For SEDGG to be of broad practical value, the mobility of semiconductor grain boundaries must be increased substantially. Mobility enhancement has been achieved via ***doping*** and ***ion*** ***bombardment*** .
ST review crystn film amorphous substrate; zone crystn film amorphous substrate review; surface energy oriented film crystn review
IT Surface energy
(crystn. of oriented films on amorphous substrate by grain growth driven by)
IT Films
(crystn. of oriented, on amorphous substrate by zone-melting recrystn.

and surface-energy-driven grain growth)
IT Zone crystallization
(of oriented films, on amorphous substrate)
IT Crystallization
(of oriented films, on amorphous substrate by surface-energy-driven grain growth)
IT 7440-56-4, properties 7440-57-5, properties
RL: PRP (Properties)
(crystn. of oriented films of, on amorphous substrate by surface-energy-driven grain growth)
IT 7440-21-3, properties
RL: PRP (Properties)
(crystn. of oriented films of, on amorphous substrate by zone-melting recrystn. and surface-energy-grain growth)

L7 ANSWER 90 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:542324 CAPLUS
DN ~~105:142324~~
ED Entered STN: 18 Oct 1986
TI The diffraction of light by transient ***gratings*** in crystalline, ***ion*** - ***implanted*** , and amorphous ***silicon***
AU Vaitkus, J.; Jarasiunas, K.; Gaubas, E.; Jonikas, L.; Pranaitis, R.; Subacius, L.
CS Dep. Semicond. Phys., Vilnius V. Kapsukas State Univ., Vilnius, 232054, USSR
SO IEEE Journal of Quantum Electronics (1986), QE-22(8), 1298-1305
CODEN: IEJQA7; ISSN: 0018-9197
DT Journal
LA English
CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB The results of the transient ***grating*** technique applied to single crystals of ***Si*** were analyzed by taking into account free carrier absorption and nonlinear recombination. By using different configurations of this technique, the exposure and decay characteristics of ***gratings*** in the vol. or surface of ***Si*** of different properties (pure, ***doped*** with deep or shallow traps, ***ion*** ***implanted*** , or amorphous) were investigated. The presence of impurities does not change the dominant mechanism of n modulation by the photogenerated nonequil. carriers. Increased damage of ***Si*** leads to a decrease in carrier diffusion (implanted ***Si***) with, in the case of amorphous ***Si*** , domination of ***grating*** decay by carrier recombination. The properties of ***gratings*** in high external d.c. or a.c. (microwave) elec. fields enables one to evaluate hot carrier diffusion coeffs.
ST optical diffraction transient ***grating*** ***silicon***
IT Optical diffraction
(by transient ***gratings*** in cryst. and ***ion*** ***implanted*** or amorphous ***silicon***)
IT Electric current carriers
(diffusion coeffs. of, in ***silicon***)
IT Diffraction ***gratings***
(transient, in cryst. and ***ion*** ***implanted*** and amorphous ***silicon***)
IT 7440-21-3, properties
RL: PRP (Properties)
(optical diffraction by transient ***gratings*** in cryst. or ***ion*** ***implanted*** or hydrogenated amorphous)
IT 7440-42-8, properties 7440-57-5, properties 7723-14-0, properties 12385-13-6, properties
RL: PRP (Properties)
(optical diffraction by transient ***gratings*** in ***silicon*** contg.)

L7 ANSWER 91 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1986:469861 CAPLUS
DN 105:69861
ED Entered STN: 23 Aug 1986
TI Optical wave-guiding components
IN Strain, Robert J.
PA Fairchild Semiconductor Corp., USA
SO U.S., 9 pp.

CODEN: USXXAM
DT Patent
LA English
IC ICM G02B006-10
ICS H01L021-22; H01L031-00; B44C001-22
INCL 350096120
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI	US 4585299	A	19860429	US 1983-515112	19830719
PRAI	US 1983-515112		19830719		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4585299	ICM	G02B006-10
	ICS	H01L021-22; H01L031-00; B44C001-22
	INCL	350096120
	IPCI	G02B0006-10 [ICM,4]; H01L0021-22 [ICS,4]; H01L0031-00 [ICS,4]; B44C0001-22 [ICS,4]
	NCL	385/132.000; 216/002.000; 216/024.000; 216/079.000; 385/014.000; 438/031.000; 438/045.000; 438/449.000

AB Optical wave-guiding components and a process for fabricating them in a substrate using conventional integrated circuit fabrication techniques are claimed. ***Ions*** of a suitable ***dopant*** (e.g., B, P, As, or Ge) are selectively implanted in a ***Si*** substrate to create an interior region defining a wave-guiding region with a 1st index of refraction. A wave confining region surrounding the wave-guiding region is created by oxidizing the ***Si*** substrate, which has a 2nd index of refraction lower than the 1st index of refraction. Various configurations of components, from which various optical component characteristics (e.g., for optical attenuators, ***couplers*** , and terminators) can be obtained, are disclosed. The optical components also may be combined with electronic circuit components (e.g., a diode, to form an optical detector) formed on the same substrate.
ST optical waveguide fabrication ***silicon*** substrate; ***ion*** ***implantation*** optical waveguide fabrication
IT ***Ion*** beams
(***implantation*** by, in optical waveguide fabrication in ***silicon*** substrates)
IT Waveguides
(optical, fabrication of, in ***silicon*** substrates)
IT Diodes
(photo-, ***silicon*** , optical waveguide fabrication on substrate with)
IT Optical detectors
(semiconductive, with integral optical waveguides)
IT 7440-38-2, uses and miscellaneous 7440-42-8, uses and miscellaneous 7440-56-4, uses and miscellaneous 7723-14-0, uses and miscellaneous
RL: USES (Uses)
(implantation of, in optical waveguide fabrication in ***silicon*** substrates)
IT 12033-89-5, uses and miscellaneous
RL: USES (Uses)
(in optical waveguide fabrication in ***silicon*** substrates)
IT 7631-86-9, uses and miscellaneous
RL: USES (Uses)
(optical waveguide confining region of, on ***silicon*** substrate)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(optical waveguide fabrication in substrates of)

L7 ANSWER 92 OF 187 CAPLUS
AN 1984:540938 CAPLUS
DN 101:140938
ED Entered STN: 13 Oct 1984
TI Change in the dimensions of topology elements of a poly(methyl methacrylate) mask irradiated with medium energy ions
AU Valiev, K. A.; Danilov, V. A.; Makhmutov, R. Kh.; Rakov, A. V.; Filippov, M. N.; Shchuchkin, A. G.

CS Inst. Obshch. Fiz., USSR
SO Mikroelektronika (1984), 13(3), 277-80
CODEN: MKETA9; ISSN: 0544-1269
DT Journal
LA Russian
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
Section cross-reference(s): 38
AB The changes in the dimensions of micron- and submicron-size elements of the topol. of resist masks from 0.54 .mu.m thick poly(Me methacrylate) [9011-14-7] films on ***Si*** substrates during ***bombardment*** with 100 keV 4He+ ***ions*** were detd. for the prepn. of high-precision photopatterns for diffraction ***gratings*** . Small changes of dimensions can be compensated by corresponding corrections of the initial dimensions of the masks.
ST polymethyl methacrylate ***ion*** ***bombardment*** ; photoresist stability helium ***ion*** ***bombardment*** ; diffraction ***grating*** photodraft polymethyl methacrylate
IT Diffraction ***gratings***
(fabrication of, changes in topol. dimensions of poly(Me methacrylate) masks during ***ion*** ***bombardment*** in relation to)
IT Resists
(photo-, poly(Me methacrylate) as, topol. dimensions of, ***ion*** ***bombardment*** effect on, for diffraction ***gratings***)
IT 9011-14-7
RL: USES (Uses)
(films, photoresists, topol. dimensions of, ***ion*** - ***bombardment*** effect on, for diffraction ***gratings***)
IT 14234-48-1, properties
RL: PRP (Properties)
(topol. dimensions of poly(Me methacrylate) resist bombarded by, for diffraction ***gratings***)

L7 ANSWER 93 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1984:59536 CAPLUS
DN 100:59536
ED Entered STN: 12 May 1984
TI ***Silicon*** nitride stencil masks for high resolution ion lithography proximity printing
AU Randall, J. N.; Flanders, D. C.; Economou, N. P.; Donnelly, J. P.; Bromley, E. I.
CS Lincoln Lab., Massachusetts Inst. Technol., Lexington, MA, 02173, USA
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1983), 1(4), 1152-5
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)
AB Masked ion beam lithog. using ***Si*** nitride stencil masks at a 25 .mu.m mask-to-sample gap was used to replicate 80 nm lines and spaces in poly(Me methacrylate). An improved reactive ion etching technique for the ***Si*** -rich ***Si*** nitride mask material using CHF3 at a 500 V self-bias potential is reported. A grid support mask is proposed as a means of exposing arbitrary patterns with a stencil mask. The principle of this technique is demonstrated in the special case of a ***grating*** .
ST ***silicon*** nitride mask ion lithog
IT Electron beam, chemical and physical effects
(in high-resoln. ion lithog. using poly(methylacrylate) film, ***silicon*** nitride stencil mask for)
IT Resists
(***silicon*** nitride mask, for high-resoln. ion lithog., reactive ion etching technique for)
IT Stencils
(***silicon*** nitride, as mask for high-resoln. ion lithog.)
IT Lithography
(ion-beam, ***silicon*** nitride stencil mask for high-resoln.)
IT Etching
(ion-beam, reactive, of ***silicon*** nitride stencil mask for high resoln. ion lithog.)
IT 12184-90-6, uses and miscellaneous 12586-59-3, chemical and physical

effects 28132-48-1, uses and miscellaneous
RL: USES (Uses)
(high-resoln. ***ion*** lithog. using poly(methylacrylate) film ***bombarded*** by, ***silicon*** nitride stencil mask for)
IT 75-46-7
RL: USES (Uses)
(in reactive ion etching of ***silicon*** nitride stencil mask)
IT 9011-14-7
RL: USES (Uses)
(***silicon*** nitride stencil mask for high resoln. ion lithog. with film of)

L7 ANSWER 94 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:603418 CAPLUS
DN 99:203418
ED Entered STN: 12 May 1984
TI ***Silicon*** diffraction ***grating*** for optical communications
PA Oki Electric Industry Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC G02B005-18
ICA H01L021-306
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 58076804	A2	19830510	JP 1981-174412	19811102
PRAI	JP 1981-174412		19811102		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 58076804	IC	G02B005-18
	ICA	H01L021-306
	IPCI	G02B0005-18; H01L0021-306 [ICA]

AB A ***Si*** diffraction ***grating*** useful in optical communication systems is obtained by high concn. ***ion*** ***implantation*** of a ***Si*** wafer with B atoms to form a p+-layer, forming a diffraction ***grating*** pattern on the p+-layer via photolithog., etching (e.g. by ion milling) the p+-layer, and etching (e.g. using an amine-type etching soln.) the ***Si*** wafer using the p+-layer pattern as a chem. etching resist. A high dispersion angle high performance diffraction ***grating*** is obtained.
ST ***silicon*** diffraction ***grating*** communication
IT Diffraction ***gratings***
(***silicon*** , for optical communications)
IT Communication
(optical, ***silicon*** diffraction ***grating*** for)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(diffraction ***grating*** from boron-contg., for optical communications)
IT 7440-42-8, uses and miscellaneous
RL: USES (Uses)
(diffraction ***grating*** from ***silicon*** doped with, for optical communications)

L7 ANSWER 95 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1983:153480 CAPLUS
DN 98:153480
ED Entered STN: 12 May 1984
TI Study of the electrophysical properties of implanted semiconductor layers under laser excitation
AU Vaitkus, J.; Gaubas, E.; Grivickas, V.; Jonikas, L.; Pranevicius, L.; Skilinskas, S.; Jarasiunas, K.
CS Kaunas A. Snieckus Politech. Inst., Vilnius V. Kapsukas State Univ., Vilnius, USSR
SO Lietuvos Fizikos Rinkinys (1982), 22(6), 86-90
CODEN: LFRMA7; ISSN: 0024-2969

DT Journal
LA Russian
CC 76-5 (Electric Phenomena)
Section cross-reference(s): 73
AB The possibilities of the application of laser pulse in the study of the electro-phys. characteristics of implanted semiconducting layers are discussed. For illustration, measurements with Ar+-doped n- ***Si*** are presented. The sensitivity to implantation dose was detd. Photocond. kinetics were studied for excitation by the radiation of the 2nd harmonic of a YAG laser. A dynamic phase diffraction ***grating*** was also used to study the samples. The intensities of the diffraction and photocond upon excitation by ns pulses of a laser are sensitive to a change of the lifetime of carriers in the implanted layer in the region of dose of ***implantation*** >1013 ***ion*** /cm2. Therefore such a technique is a perspective for detg. the lifetime in implanted layers, since other methods are not sensitive in this region.
ST laser excitation semiconductor implantation electrophys; photocond ***silicon*** argon implanted laser
IT Laser radiation
(diffraction of, from ***ion*** - ***implanted*** semiconductor layers)
IT Laser radiation, chemical and physical effects
(electrophys. property detn. of implanted semiconductor layers under excitation by)
IT ***Ion*** beams
(***implantation*** of, in semiconductor layers, laser excitation in study of electrophys. properties in relation to)
IT Semiconductor materials
(implanted layers, laser excitation in study of electrophys. properties of)
IT Electric current carriers
(lifetime of, in implanted semiconductor layers under laser excitation)
IT Electric property
Photoconductivity and Photoconduction
Photoelectric property
(of implanted semiconductor layers under laser excitation)
IT 7440-21-3, properties
RL: PRP (Properties)
(electrophys. properties of argon ***ion*** - ***implanted*** layers of, laser excitation in study of)
IT 14791-69-6, properties
RL: PRP (Properties)
(electrophys. properties of ***silicon*** contg. implanted, laser excitation in study of)

L7 ANSWER 96 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1982:26736 CAPLUS
DN 96:26736
ED Entered STN: 12 May 1984
TI Diffraction of light on dynamic heterogeneous lattices in semiconductors
AU Gaubas, E.; Vaitkus, J.; Jarasiunas, K.
CS Vilnius State Univ., Vilnius, USSR
SO Lietuvos Fizikos Rinkinys (1981), 21(5), 77-86
CODEN: LFRMA7; ISSN: 0024-2969
DT Journal
LA Russian
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
AB Light diffraction on nonhomogeneities in the direction of light propagation transient free-carrier ***gratings*** was analyzed. Calcns. showing the general properties of such ***gratings*** are presented. Exptl. investigation of ***grating*** are performed on B- ***ion*** ***implanted*** layers of ***Si*** and on CdS, CdSe single crystals in the region of the absorption edge.
ST semiconductor diffraction ***grating***
IT Semiconductor materials
(diffraction ***gratings*** based on dynamic heterogeneous lattice)
IT Diffraction ***gratings***
(semiconductor, dynamic heterogeneous lattice)

L7 ANSWER 97 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1981:106398 CAPLUS

DN 94:106398
ED Entered STN: 12 May 1984
TI ***Ion*** - ***implanted*** ***grating*** type ***silicon*** solar cells: junction depth dependence
AU Hwang, H. L.; Liu, D. C.; Tang, R. S.; Kao, Y. R.; Loferski, J. J.
CS Natl. Tsing Hua Univ., Hsinchu, Taiwan
SO Conference Record of the IEEE Photovoltaic Specialists Conference (1980), 14th, 381-5
CODEN: CRCNDP; ISSN: 0160-8371
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
AB ***Si*** ***grating*** -type solar cells with the light-receiving surface covered by a finely spaced ***grating*** of charge-collection barriers were fabricated by ***ion*** ***implantation*** . The as-fabricated cells exhibited an open-circuit voltage of 0.54 V, a short-circuit current (air-mass-1, AMI) of 32 mA/cm2 (without antireflection coating), a fill factor of 0.68, and a conversion efficiency of 11%. Annealing at 1100.degree. for a few minutes followed by a slow cooling rate was required to obtain optimized performance. For a fixed ***grating*** geometry, deep junctions resulted in better cells than shallow junctions within the B implants. The results are described of a numerical simulation in which the alternating direction implicit method was employed to obtain the collection efficiencies of ***grating*** cells with the junction depths varied. The computed AM1 current-voltage characteristics of ***grating*** ***Si*** cells are also described.
ST ***silicon*** solar cell; ***ion*** ***implanted*** ***grating*** ***silicon*** cell
IT Simulation model
(for collection efficiency of ***grating*** -type ***silicon*** solar cells)
IT Photoelectric devices
(solar, ***silicon*** , ***ion*** - ***implanted*** ***grating*** -type, junction depth dependence of)
IT 7440-21-3, uses and miscellaneous
RL: USES (Uses)
(photoelec. solar cells, ***ion*** - ***implanted*** ***grating*** -type, junction depth dependence of)

L7 ANSWER 98 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1981:18233 CAPLUS
DN 94:18233
ED Entered STN: 12 May 1984
TI ***Ion*** ***implanted*** ***grating*** type ***silicon*** solar cells
AU Hwang, Huey-Liang; Tang, Ru-Shyah; Loferski, Joseph J.; Yang, Ying-Chuan
CS Dep. Electr. Power Eng., Natl. Tsing Hua Univ., Hsinchu, Taiwan
SO Proceedings of the Conference on Solid State Devices (1980), Volume Date 1979, 11th., 527-32
CODEN: PCSDDB
DT Journal
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
AB ***Si*** ***grating*** -type solar cells were fabricated by ***ion*** - ***implantation*** techniques. The cells as-fabricated showed max. open-circuit voltage of 0.54 V, and max. short-circuit c.d. of 34 mA/cm2 (without antireflection coating) under an air-mass-1 illumination, and max. fill factor of 0.68. The series resistance problems were examd., and metal gridding superimposed on the ***grating*** was found essential. The effects of impurity profiles and the annealing conditions were studied. For a fixed value of junction depth, the cell output peaked for doping levels of .apprx.1016 cm-3. For a fixed ***grating*** geometry, within the limits of the ***implanted*** ***ion*** concn., the deeper the junction the higher the cell efficiency, which is in contrast to the commonly shallow-junction cells. Slow cooling from thermal annealing is essential in improving the ***ion*** - ***implanted*** solar- cell efficiencies.
ST ***silicon*** solar cell ***grating*** type; boron doping ***silicon*** solar cell
IT Photoelectric devices
(solar, ***silicon*** , ***ion*** - ***implanted***

grating -type, prepn. and performance of)
IT 7440-42-8P, uses and miscellaneous
RL: PREP (Preparation)
(photoelec. solar cells from ***silicon*** doped by, prepn. and performance of ***grating*** -type)
IT 7440-21-3P, uses and miscellaneous
RL: PREP (Preparation)
(photoelec. solar cells, ***ion*** - ***implanted*** ***grating*** -type, prepn. and performance of)

L7 ANSWER 99 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1980:485077 CAPLUS
DN 93:85077
ED Entered STN: 12 May 1984
TI X-ray lithography by synchrotron radiation of the SOR-RING storage ring
AU Aritome, H.; Matsui, S.; Moriwaki, K.; Namba, S.
CS Fac. Eng. Sci., Osaka Univ., Toyonaka, 560, Japan
SO Journal of Vacuum Science and Technology (1979), 16(6), 1939-41
CODEN: JVSTAL; ISSN: 0022-5355
DT Journal
LA English
CC 74-5 (Radiation Chemistry, Photochemistry, and Photographic Processes)
Section cross-reference(s): 76
AB X-ray lithog. by synchrotron radiation is a promising technique for a very high resoln. replication of submicron patterns. The main disadvantage of x-ray lithog. by synchrotron radiation is that the exptl. system becomes large and expensive. The results of x-ray lithog. by using the SOR-RING storage ring at an electron energy of 300 MeV are presented. The SOR-RING of the University of Tokyo had a radius of curvature of the electron orbit of 1.1 m and a total orbit length of 17.4 m. The fabrication method of x-ray masks for synchrotron radiation is described. As a pattern supporting material, a parylene film of 1-2 .mu.m thick was used. In this case, the wavelength range between 5-10 nm of synchrotron radiation was effective for exposure of resist. The optimum resoln. of pattern replication was obtained. Pattern replication with large contrast was obtained. Line patterns, which were 100-500 nm wide, and ***grating*** patterns were replicated in poly(Me methacrylate) resist with a large aspect ratio. The above patterns were transferred in various materials, such as ***Si*** and SiO2, by reactive sputter etching. Etching mask patterns were replicated from the pattern of resist itself or fabricated by metal lift-off. Vertical-walled line patterns of 0.5-.mu.m-thick ***Si*** were obtained by resist as a mask. ***Ion*** - ***bombardment*** -enhanced chem. etching is described as a pattern transfer method of submicron size.
ST x ray lithog synchrotron radiation
IT Photomasks
(for x-ray lithog., fabrication of)
IT Semiconductor devices
(synchrotron radiation x-ray lithog. in fabrication of, masks for)
IT Resists
(electron-beam, poly(Me methacrylate), for x-ray mask fabrication)
IT Electric circuits
(micro-, synchrotron radiation x-ray lithog. in fabrication of, masks for)
IT Lithography
(x-ray, by synchrotron radiation, masks for)
IT 9011-14-7
RL: USES (Uses)
(electron-beam resist, for x-ray mask prepn.)
IT 7440-47-3, uses and miscellaneous 7440-57-5, uses and miscellaneous
RL: DEV (Device component use); USES (Uses)
(photomask contg., for x-ray lithog. by synchrotron radiation)
IT 7440-21-3, uses and miscellaneous 25722-33-2
RL: USES (Uses)
(photomask support, for x-ray lithog. by synchrotron radiation)

L7 ANSWER 100 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1980:173188 CAPLUS
DN 92:173188
ED Entered STN: 12 May 1984
TI Fabrication of a ***grating*** pattern with submicrometer dimension in ***silicon*** crystal by ***ion*** - ***bombardment*** -enhanced

etching
AU Moriwaki, Kazuyuki; Masuda, Noboru; Aritome, Hiroaki; Namba, Susumu
CS Fac. Eng. Sci., Osaka Univ., Osaka, 560, Japan
SO Japanese Journal of Applied Physics (1980), 19(3), 491-4
CODEN: JJAPA5; ISSN: 0021-4922
DT Journal
LA English
CC 76-4 (Electric Phenomena)
AB ***Ion*** - ***bombardment*** -enhanced etching (IBEE) as a means for fabrication of submicron pattern is described. Electron beam lithog. and lift-off technique are used to form a Cr mask pattern for ***ion*** - ***bombardment*** . The etched depth can be controlled from 83 to 128 nm by varying the ion dose with an accuracy of 10 nm. A ***grating*** pattern with a period of 0.6 .mu. is fabricated in a ***Si*** substrate by IBEE technique by using Ar+ ion. At an Ar+ ion energy of 60 keV, the amt. of side etching is obsd. to be 40 nm for a 0.21-.mu. deep etched sample. This result shows the high resoln. of IBEE.
ST ion etching ***silicon*** ***grating***
IT Ion beams
(etching by, ***silicon*** crystal rating fabrication by)
IT Etching
(ion-beam, of ***silicon*** crystal grading pattern)
IT 7440-21-3, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(etching of grade pattern on crystal of, ion-beam)
IT 14791-69-6, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(etching of ***silicon*** crystal grading pattern by beam of)

L7 ANSWER 101 OF 187 CAPLUS COPYRIGHT 2006 ACS on STN
AN 1974:455664 CAPLUS
DN 81:55664
ED Entered STN: 12 May 1984
TI Field effect transistors for Schottky barrier ***gratings*** made by electric shielding and ***ion*** ***implantation***
AU Arnodo, C.; Martin, P.
CS Lab. Cent. Rech., Thomson-CSF, Orsay, Fr.
SO AVISEM 71, Colloq. Int. Appl. Tech. Vide Ind. Semicond. Composants Electron. Microelectron., [C. R.], 3rd (1971), Meeting Date 1971, 199-204
Publisher: Soc. Fr. Ing. Tech. Vide, Paris, Fr.
CODEN: 28LNAC
DT Conference
LA French
CC 71-13 (Electric Phenomena)
AB A field-effect transistor (channel thickness, length, and width of 0.4, 4, and 25 .mu.m, resp.; gate width of 2 .mu.m), having a p-type ***Si*** substrate base and a Schottky-barrier gate, was prepd. by: (1) making an opening in the SiO2 layer (thickness 1 .mu.m) for the contacts (source, drain, and channel); (2) reforming a 1000-.ANG.-thick SiO2 layer; (3) prepg. a Au mask exposing only thezones for the source and drain contacts; (4) implantation of the source and drain contacts (50-keV P ions, dose 1016 ions/cm2); (5) chem. etching of the Au mask; (6) implantation of the channel (100-keV P ions, dose 3 .times. 1016 ions/cm3); (7) annealing at 800.degree. under vacuum for 1 hr; (8) making openings in the 1000-.ANG.SiO2 layer for the source and drain contacts and the gate; (9) prepn. of an inverse mask for the contacts and the gate; (10) deposition of a double layer of Mo and Au by cathodic sputtering; (11) dissoln. of the inverse electroresist mask [poly(methyl methacrylate)]; and (12) annealing the contacts. The elec. characteristics of the transistor were: satn. current 1 mA, pinch-off voltage 1.5 V, blocking voltage -2 V, and transconductance 0.6 mmho.
ST ***silicon*** Schottky barrier transistor; field effect ***silicon*** transistor
IT Transistors
(field-effect, fabrication of, by electronic masking with phosphorus ***ion*** ***implantation***)
IT 7723-14-0, uses and miscellaneous
RL: USES (Uses)
(***silicon*** field-effect transistor fabrication by electronic masking with ***ion*** ***implantation*** of)

L7 ANSWER 102 OF 187 INSPEC (C) 2006 IEE on STN

AN 2006:8700813 INSPEC
TI Submicrometer period ***silicon*** diffraction ***gratings*** by
porous etching.
AU Nagy, N.; Volk, J.; Hamori, R.; Barsony, I. (Res. Inst. for Tech. Phys. &
Mater. Sci., Budapest, Hungary)
SO Physica Status Solidi A (June 2005) vol.202, no.8, p.1639-43. 10 refs.
Published by: Wiley-VCH
CODEN: PSSABA ISSN: 0031-8965
SICI: 0031-8965(200506)202:8L.1639:SPSD;1-D
Conference: 4th International Conference on Porous Semiconductors-Science
and Technology (PSST-2004). Valencia, Spain, 14-19 March 2004
DT Conference Article; Journal
TC Experimental
CY Germany, Federal Republic of
LA English
AB We have developed a new technique to manufacture diffraction
gratings on porous ***silicon*** and on ***silicon***
interface. Using holography facilitate to adjust the periodic length of
gratings in the submicron range. The holographically exposured and
developed photoresist applied on the ***silicon*** surface provides
the mask for the ***ion*** ***implantation*** . The sinusoidal
grating between the substrate and the porous ***silicon***
layer is achieved after the anodic etch process. The PS layer can be
removed by alkali etching. Sinusoidal one- and two-dimensional diffraction
gratings have been produced with 375 nm periodic length. Their AFM
images are shown. The diffraction efficiencies were measured.
CC A4240E Holographic optical elements; holographic gratings; A4280F
Gratings, echelles; A4280L Optical waveguides and couplers; A8160C Surface
treatment and degradation in semiconductor technology
CT ATOMIC FORCE MICROSCOPY; DIFFRACTION ***GRATINGS*** ; ELEMENTAL
SEMICONDUCTORS; ETCHING; HOLOGRAPHIC ***GRATINGS*** ; ***ION***
IMPLANTATION ; MASKS; OPTICAL FABRICATION; OPTICAL WAVEGUIDES;
PHOTORESISTS; POROUS SEMICONDUCTORS; ***SILICON***
ST ***submicrometer period silicon diffraction grating*** ; porous
etching; diffraction efficiency; ***porous silicon*** ; ***silicon***
*** interface*** ; holography; photoresist; mask; ***ion implantation*** ;
sinusoidal grating ; anodic etch process; alkali etching; AFM;
Si
CHI Si sur, Si el
ET Si

L7 ANSWER 103 OF 187 INSPEC (C) 2006 IEE on STN
AN 2005:8675507 INSPEC
TI High speed 2*2 optical switch in ***silicon*** -on-insulator based on
plasma dispersion effect.
AU Sun Fei; Yu Jin-Zhong; Chen Shao-Wu (Nat. Key Lab. on Integrated
Optoelectronics, Chinese Acad. of Sci., China)
SO Chinese Physics Letters (Dec. 2005) vol.22, no.12, p.3097-9. 16 refs.
Published by: Chinese Phys. Soc
Price: CCCC 0256-307X/05/123097+03$30.00
CODEN: CPLEEU ISSN: 0256-307X
SICI: 0256-307X(200512)22:12L.3097:HSOS;1-N
DT Journal
TC Practical; Experimental
CY China
LA English
AB Based on free carrier plasma dispersion effect, a 2*2 optical switch is
fabricated in a ***silicon*** -on-insulator substrate by inductively
coupled-plasma technology and ***ion*** ***implantation*** . The
device has a Mach-Zehnder interferometer structure, in which two
directional ***couplers*** serve as the power splitter and combiner.
The switch presents an insertion loss of 3.04 dB and a response time of
496 ns.
CT ELEMENTAL SEMICONDUCTORS; HIGH-SPEED OPTICAL TECHNIQUES; MACH-ZEHNDER
INTERFEROMETERS; OPTICAL BEAM SPLITTERS; OPTICAL DIRECTIONAL
COUPLERS ; OPTICAL FABRICATION; OPTICAL LOSSES; OPTICAL SWITCHES;
SILICON -ON-INSULATOR
ST high speed 2*2 optical switch; optical communications;
silicon-on-insulator ; free carrier plasma dispersion effect;
Mach-Zehnder interferometer structure; power splitter; power combiner;
insertion loss; response time; 3.04 dB; 496 ns; ***Si***
CHI Si int, Si el

PHP loss 3.04E+00 dB; time 4.96E-07 s
ET B; Si

L7 ANSWER 104 OF 187 INSPEC (C) 2006 IEE on STN
AN 2005:8565691 INSPEC DN A2005-21-4280L-002; B2005-10-4130-060
TI Subterranean ***silicon*** photonics: demonstration of buried waveguide-coupled microresonators.
AU Indukuri, T.; Koonath, P.; Jalali, B. (Dept. of Electr. Eng., Univ. of California, Los Angeles, CA, USA)
SO Applied Physics Letters (22 Aug. 2005) vol.87, no.8, p.81114-1-3. 11 refs.
Doc. No.: S0003-6951(05)06232-7
Published by: AIP
Price: CCCC 0003-6951/2005/87(8)/081114-1(3)/$22.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(20050822)87:8L.81114:SSPD;1-F
DT Journal
CY United States
LA English
AB Laterally-coupled ***silicon*** microresonators are fabricated beneath the surface of a ***silicon*** -on-insulator substrate using a modified separation by implantation of an oxygen technique. ***Implantation*** of oxygen ***ions*** into a substrate with patterned thermal oxide mask was utilized to realize buried waveguiding structures. Microdisk resonators in the buried ***silicon*** layer show loaded quality factors of 2000, with extinction ratios in excess of 20 dB. The process also results in the formation of a ***silicon*** layer on the surface of the wafer that is suitable for the fabrication of electronic devices, thereby paving the way for three-dimensional monolithic integration of electronics and photonics in ***silicon*** .
CC A4280L Optical waveguides and couplers; A4285D Optical fabrication, surface grinding; A6170T Doping and implantation of impurities; B4130 Optical waveguides; B2550G Lithography (semiconductor technology); B2550B Semiconductor doping; B4270 Integrated optoelectronics
CT ELEMENTAL SEMICONDUCTORS; INTEGRATED OPTOELECTRONICS; ***ION*** ***IMPLANTATION*** ; MASKS; MICROCAVITIES; OPTICAL ***COUPLERS*** ; OPTICAL FABRICATION; OPTICAL RESONATORS; OPTICAL WAVEGUIDES; OXYGEN; SEPARATION; ***SILICON***
ST ***subterranean silicon photonics*** ; buried waveguide-coupled microresonators; ***silicon-on-insulator substrate*** ; modified separation; oxygen implantation; patterned thermal oxide mask; microdisk resonators; quality factors; extinction ratios; three-dimensional monolithic integration
ET B

L7 ANSWER 105 OF 187 INSPEC (C) 2006 IEE on STN
AN 2005:8502529 INSPEC DN A2005-17-4283-001; B2005-09-4145-001
TI Microring and microdisk optical resonators using ***silicon*** nanocrystals and erbium prepared using ***silicon*** technology.
AU Gardner, D.S. (Microprocessor Technol. Labs., Intel Corp., Santa Clara, CA, USA); Brongersma, M.L.
SO Optical Materials (Feb. 2005) vol.27, no.5, p.804-11. 28 refs.
Doc. No.: S0925-3467(04)00214-9
Published by: Elsevier
CODEN: OMATET ISSN: 0925-3467
SICI: 0925-3467(200502)27:5L.804:MMOR;1-D
DT Journal
TC Experimental
CY Netherlands
LA English
AB A methodology for the integration of narrow-linewidth light sources monolithically onto ***silicon*** using ***silicon*** process technology is presented. Microcavity resonator based narrow-linewidth light sources were designed and modeled using the 3-D full-wave finite-difference time-domain (FDTD) method of solving Maxwell's equations. The microcavity confines light to a small modal volume by resonant recirculation in a structure with low roundtrip optical loss. The resonators were formed in close proximity to waveguides used for evanescent-wave coupling of light out of the microcavity. Waveguides using ***Si*** -nanocrystals in SiO2 are difficult to couple to planar microdisks because the mode extends deep into the oxide, whereas simulations show that microresonators using SiNx can. The coupling efficiency between the resonator and the single-mode waveguides was

optimized by varying the gap size and the waveguide width and thickness. Luminescence from ***silicon*** nanoparticles in both SiO2 and SiNx films was studied. Process optimization for forming ***Si*** nanoparticles in SiO2 or SiNx including the effects of hydrogen annealing and the preparation of SiNx films with excess ***Si*** by various techniques (CVD and ***Si*** ***ion*** ***implantation***) was performed. High-index-contrast microcavity resonators were fabricated using SiNx on SiO2 with ***silicon*** nanoparticles and imaged using atomic force microscopy. The structures include microdisk and microring cavities doped with ***silicon*** nanoparticles with and without erbium. [All rights reserved Elsevier].

CC A4283 Micro-optical devices and technology; A4282 Integrated optics; A6170A Annealing processes; A8115H Chemical vapour deposition; A7855C Photoluminescence in elemental semiconductors; A4280L Optical waveguides and couplers; A4215E Optical system design; A4285D Optical fabrication, surface grinding; B4145 Micro-optical devices and technology; B4140 Integrated optics; B2550A Annealing processes in semiconductor technology; B0520F Chemical vapour deposition; B4220 Luminescent materials; B4130 Optical waveguides

CT ANNEALING; ATOMIC FORCE MICROSCOPY; CHEMICAL VAPOUR DEPOSITION; ELEMENTAL SEMICONDUCTORS; ERBIUM; FINITE DIFFERENCE TIME-DOMAIN ANALYSIS; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; LIGHT SOURCES; LUMINESCENCE; MAXWELL EQUATIONS; MICRO-OPTICS; MICROCAVITIES; NANOPARTICLES; OPTICAL ***COUPLERS*** ; OPTICAL DESIGN TECHNIQUES; OPTICAL FABRICATION; OPTICAL LOSSES; OPTICAL RESONATORS; OPTICAL WAVEGUIDES; ***SILICON***

ST microring optical resonators; microdisk optical resonators; ***silicon*** *** nanocrystals*** ; erbium; ***silicon technology*** ; narrow-linewidth light sources; microcavity resonator; 3-D full-wave finite-difference time-domain method; FDTD method; Maxwell equations; resonant recirculation; roundtrip optical loss; evanescent-wave coupling; coupling efficiency; single-mode waveguides; luminescence; ***silicon*** *** nanoparticles*** ; process optimization; hydrogen annealing; CVD; ***ion implantation*** ; atomic force microscopy; ***Si*** ; Er; SiO2; SiNx

CHI Si el; Er el; SiO2 bin, O2 bin, Si bin, O bin; SiN bin, Si bin, N bin

ET D; Si; O*Si; SiO2; Si cp; cp; O cp; N*Si; SiNx; N cp; Er; SiO; O; SiN

L7 ANSWER 106 OF 187 INSPEC (C) 2006 IEE on STN

AN 2005:8502518 INSPEC DN A2005-17-7865H-002; B2005-09-2530C-014

TI Optical gain in different ***silicon*** nanocrystal systems.

AU Fauchet, P.M.; Ruan, J.; Chen, H. (Dept. of Electr. & Comput. Eng., Univ. of Rochester, NY, USA); Pavesi, L.; Negro, L.D.; Cazzaneli, M.; Elliman, R.G.; Smith, N.; Samoc, M.; Luther-Davies, B.

SO Optical Materials (Feb. 2005) vol.27, no.5, p.745-9. 22 refs.
Doc. No.: S0925-3467(04)00221-6
Published by: Elsevier
CODEN: OMATET ISSN: 0925-3467
SICI: 0925-3467(200502)27:5L.745:OGDS;1-4

DT Journal

TC Experimental

CY Netherlands

LA English

AB An extensive experimental study of optical gain in ***silicon*** nanocrystals is under way. Different types of samples have been tested (e.g., nanocrystalline ***silicon*** superlattices prepared in Rochester, ***ion*** ***implanted*** ***silicon*** dioxide prepared in Canberra) using different measurement techniques (e.g., variable stripe length method in Trento and in Rochester, prism coupling in Canberra) and different pump laser sources (from femtosecond to cw). All the results presented here have been reproduced in at least two different laboratories, making it unlikely that experimental artifacts play a role. So far, we have observed nsec-duration gain in the visible/near infrared range in nanocrystalline ***silicon*** superlattices under high photoinjection conditions with short laser pulses. For other conditions (e.g., lower photoinjection, ***ion*** ***implanted*** samples with a lower concentration of quantum dots), we have not observed gain. [All rights reserved Elsevier].

CC A7865H Optical properties of elemental semiconductors (thin films/low-dimensional structures); A4280W Ultrafast optical techniques; A4280L Optical waveguides and couplers; A4270Y Other optical materials; A4280G Optical prisms and projection systems; B2530C Semiconductor superlattices, quantum wells and related structures; B2520C Elemental

semiconductors; B4110 Optical materials
CT ELEMENTAL SEMICONDUCTORS; HIGH-SPEED OPTICAL TECHNIQUES; ***ION*** ***IMPLANTATION*** ; NANOSTRUCTURED MATERIALS; OPTICAL ***COUPLERS*** ; OPTICAL MATERIALS; OPTICAL PRISMS; OPTICAL PUMPING; SEMICONDUCTOR SUPERLATTICES; ***SILICON*** ; ***SILICON*** COMPOUNDS
ST ***silicon nanocrystal systems*** ; optical gain; ***nanocrystalline*** *** silicon superlattices*** ; ***ion implanted silicon dioxide*** ; variable stripe length method; prism coupling; pump laser sources; photoinjection; quantum dots; ***Si*** ; SiO2
CHI Si el; SiO2 bin, O2 bin, Si bin, O bin
ET Si; O*Si; SiO2; Si cp; cp; O cp; SiO; O

L7 ANSWER 107 OF 187 INSPEC (C) 2006 IEE on STN
AN 2005:8484531 INSPEC DN A2005-16-4280L-020; B2005-08-4130-042
TI Refractive index profiles of planar optical waveguides in beta 2-BBO produced by ***silicon*** ***ion*** ***implantation*** .
AU Xue-Lin Wang; Feng Chen; Fei Lu; Gang Fu; Shi-Ling Li; Ke-Ming Wang (Dept. of Phys., Shandong Univ., China); Qing-Ming Lu; Ding-Yu Shen; Hong-Ji Ma; Rui Nie
SO Optical Materials (Dec. 2004) vol.27, no.3, p.459-63. 11 refs.
Doc. No.: S0925-3467(04)00325-8
Published by: Elsevier
CODEN: OMATET ISSN: 0925-3467
SICI: 0925-3467(200412)27:3L.459:RIPP;1-Y
DT Journal
TC Theoretical; Experimental
CY Netherlands
LA English
AB The planar waveguides have been fabricated inz-cut beta barium metaborate crystals by 2.8MeV ***Si*** + ***ion*** ***implantation*** with doses of 1*1015 and 3*1015 ions/cm2 at room temperature. The waveguides were characterized by the prism-coupling method. The refractive index profiles were reconstructed using reflectivity calculation method. It is found that relatively large positive changes of extraordinary refractive indices happen in the guiding regions, and the negative changes of ordinary refractive indices happen at the end of the track. TRIM'98 (transport of ions in matter) code was used to simulate the damage profile in beta -BBO by 2.8MeV ***Si*** + ***ion*** ***implantation*** . [All rights reserved Elsevier].
CC A4280L Optical waveguides and couplers; A4282 Integrated optics; A6180J Ion beam effects; A4285D Optical fabrication, surface grinding; A4270Y Other optical materials; A4280G Optical prisms and projection systems; A7820D Optical constants and parameters (condensed matter); B4130 Optical waveguides; B4140 Integrated optics; B4110 Optical materials
CT BARIUM COMPOUNDS; ***ION*** ***IMPLANTATION*** ; OPTICAL ***COUPLERS*** ; OPTICAL FABRICATION; OPTICAL MATERIALS; OPTICAL PLANAR WAVEGUIDES; OPTICAL PRISMS; REFLECTIVITY; REFRACTIVE INDEX; ***SILICON***
ST refractive index; planar optical waveguides; ***silicon ion*** *** implantation*** ; z-cut beta barium metaborate crystals; prism-coupling method; reflectivity calculation method; TRIM'98 code; 2.8 MeV; 20 degC; BBO; ***Si*** ; BaB2O4
CHI BaB2O4 ss, B2 ss, Ba ss, O4 ss, B ss, O ss; Si el
PHP electron volt energy 2.8E+06 eV; temperature 2.93E+02 K
ET Si; Si+; Si ip 1; ip 1; B*Ba*O; BaB2O; Ba cp; cp; B cp; O cp; B; Ba; O

L7 ANSWER 108 OF 187 INSPEC (C) 2006 IEE on STN
AN 2004:8195221 INSPEC DN A2005-01-6855-053; B2005-01-0520J-019
TI Structure and optical properties of sol-gel derived Gd2O3 waveguide films.
AU Hai Guo (Struct. Res. Lab., Univ. of Sci. & Technol. of China, Hefei, China); Xudong Yang; Teng Xiao; Weiping Zhang; Liren Lou; Jacques Mugnier
SO Applied Surface Science (31 May 2004) vol.230, no.1-4, p.215-21. 22 refs.
Published by: Elsevier
Price: CCCC 0169-4332/04/$30.00
CODEN: ASUSEE ISSN: 0169-4332
SICI: 0169-4332(20040531)230:1/4L.215:SOPD;1-I
DT Journal
TC Experimental
CY Netherlands
LA English
AB Pure and rare earth doped gadolinium oxide (Gd2O3) waveguide films were prepared by a simple sol-gel process and dip-coating method. Gd2O3 was

successfully synthesized by hydrolysis of gadolinium acetate. Thermogravimetric analysis (TGA) and differential thermal analysis (DTA) were used to study the thermal chemistry properties of dried gel. Structure of Gd2O3 films annealed at different temperature ranging from 400 to 750 degrees C were investigated by Fourier transform infrared (FT-IR) spectroscopy, X-ray diffraction (XRD) and transmission electron microscopy (TEM). The results show that Gd2O3 starts crystallizing at about 400 degrees C and the crystallite size increases with annealing temperature. Oriented growth of (400) face of Gd2O3 has been observed when the films were deposited on (100) ***Si*** substrate and annealed at 750 degrees C. The laser beam (lambda =632.8 nm) was coupled into the film by a prism ***coupler*** and propagation loss of the film measured by scattering-detection method is about 2 dB/cm. Luminescence properties of europium ***ions*** ***doped*** films were measured and are discussed.

CC A6855 Thin film growth, structure, and epitaxy; A8115L Deposition from liquid phases (melts and solutions); A4280L Optical waveguides and couplers; A6180B Ultraviolet, visible and infrared radiation effects; A6480G Microstructure; A7855H Photoluminescence in other inorganic materials; A6470K Solid-solid transitions; A7865P Optical properties of other inorganic semiconductors and insulators (thin films/low-dimensional structures); A7830G Infrared and Raman spectra in inorganic crystals; A8140G Other heat and thermomechanical treatments; B0520J Deposition from liquid phases; B4130 Optical waveguides

CT ANNEALING; CRYSTALLISATION; CRYSTALLITES; DIFFERENTIAL THERMAL ANALYSIS; DIP COATING; EUROPIUM; FOURIER TRANSFORM SPECTRA; GADOLINIUM COMPOUNDS; INFRARED SPECTRA; LUMINESCENCE; OPTICAL WAVEGUIDES; SOL-GEL PROCESSING; TRANSMISSION ELECTRON MICROSCOPY; WAVE PROPAGATION; X-RAY DIFFRACTION

ST structural properties; optical properties; Gd2O3 waveguide films; sol-gel process; dip coating method; hydrolysis; gadolinium acetate; thermogravimetric analysis; TGA; differential thermal analysis; DTA; thermal chemistry; annealing; infrared spectra; X-ray diffraction; XRD; transmission electron microscopy; TEM; laser beam; ***prism coupler*** ; propagation loss; scattering-detection method; luminescence properties; europium ions; crystallization; Fourier transform spectra; ***(100) Si*** *** substrate*** ; 400 to 750 degC; 632.8 nm; ***Si*** ; Gd2O3:Eu

CHI Si sur, Si el; Gd2O3:Eu ss, Gd2 ss, Eu ss, Gd ss, O3 ss, O ss, Gd2O3 bin, Gd2 bin, Gd bin, O3 bin, O bin, Eu el, Eu dop

PHP temperature 6.73E+02 to 1.02E+03 K; wavelength 6.328E-07 m

ET Gd*O; Gd2O3; Gd cp; cp; O cp; C; Si; B; Eu*Gd*O; Eu sy 3; sy 3; Gd sy 3; O sy 3; Gd2O3:Eu; Eu doping; doped materials; Gd2O; Eu; Gd; O

L7 ANSWER 109 OF 187 INSPEC (C) 2006 IEE on STN

AN 2004:8194053 INSPEC DN A2005-01-4285D-005

TI Spontaneously generated sinusoidallike structures on Ti-Ni thin film under focused ***ion*** -beam ***bombardment*** .

AU Yongqi Fu (Innovation in Manuf. Syst. & Technol., Massachusetts Inst. of Technol. Alliance, Nanyang, Singapore); Bryan, N.K.A.

SO Optics Express (9 Aug. 2004) vol.12, no.16. 10 refs.
Collection URL: http://www.opticsexpress.org/
Published by: Opt. Soc. America
Price: CCCC 1094-4087/04/$15.00
CODEN: OPEXFF ISSN: 1094-4087

DT Journal

TC Experimental

CY United States

LA English

AB A new fabrication method for a sinusoidallike structure is described. The sinusoidal structure can be spontaneously self-formed on the surface of a substrate by focused ***ion*** -beam ***bombardment*** with raster scanning and an ***ion*** incident angle perpendicular to the sample surface (normal incidence). The substrate material is a ***silicon*** wafer coated with 2- mu m-thick Ti-Ni thin film. We show by measurement and analysis of the ***grating*** characteristics at the working wavelength range from 50 to 1500 nm that the technique of self-organized formation is a valid approach for microfabrication of diffractive structures, and the spontaneously generated structure under ***ion*** ***bombardment*** is applicable for a sinusoidal ***grating*** that functions from the ultraviolet to the near-infrared wavelength range.

CC A4285D Optical fabrication, surface grinding; A4280F Gratings, echelles; A7865E Optical properties of metals and metallic alloys (thin films/low-dimensional structures)

CT DIFFRACTION ***GRATINGS*** ; FOCUSED ION BEAM TECHNOLOGY; METALLIC THIN FILMS; NICKEL; OPTICAL FABRICATION; SELF-ASSEMBLY; TITANIUM
ST sinusoidallike structures; Ti-Ni thin film; ***focused ion-beam*** *** bombardment*** ; raster scanning; ***silicon wafer*** ; ***grating*** *** characteristics*** ; self-organized formation; microfabrication; 2 mum; 50 to 1500 nm; Ti-Ni; ***Si***
CHI TiNi sur, Ni sur, Ti sur, TiNi ss, Ni ss, Ti ss; Si sur, Si el
PHP size 2.0E-06 m; wavelength 5.0E-08 to 1.5E-06 m
ET Ni*Ti; Ni sy 2; sy 2; Ti sy 2; Ti-Ni; Si; TiNi; Ti cp; cp; Ni cp; Ni; Ti

L7 ANSWER 110 OF 187 INSPEC (C) 2006 IEE on STN
AN 2004:8138578 INSPEC DN A2004-23-8160C-011; B2004-11-2550E-054
TI Fabrication and thermal annealing behavior of nanoscale ripple fabricated by focused ion beam.
AU Xie, D.Z.; Ngoi, B.K.A.; Zhou, W.; Fu, Y.Q. (Sch. of Mech. & Production Eng., Nanyang Technol. Univ., Singapore)
SO Applied Surface Science (15 April 2004) vol.227, no.1-4, p.250-4. 21 refs.
Published by: Elsevier
Price: CCCC 0169-4332/04/$30.00
CODEN: ASUSEE ISSN: 0169-4332
SICI: 0169-4332(20040415)227:1/4L.250:FTAB;1-Z
DT Journal
TC Practical; Experimental
CY Netherlands
LA English
AB The development, during annealing, of periodic one-dimensional ripple structure has been investigated. The nanoscale ripple array was fabricated on ***silicon*** (001) crystal surface using focused ion beam (FIB). Annealing was performed isothermally in a flowing argon gas ambient at 670 degrees C. The morphology of the ripple before and after annealing was analyzed by use of atomic force microscope. The height of the ripple decreased after thermal annealing. Furthermore, after annealing, spikes of gallium and/or gallium-rich precipitate were also observed on the surface of the ripples and the FIB milled areas.
CC A8160C Surface treatment and degradation in semiconductor technology; A4280F Gratings, echelles; A6820 Solid surface structure; A6170A Annealing processes; A6822 Surface diffusion, segregation and interfacial compound formation; A6170T Doping and implantation of impurities; B2550E Surface treatment (semiconductor technology); B2550N Nanometre-scale semiconductor fabrication technology; B2550A Annealing processes in semiconductor technology; B2550B Semiconductor doping
CT ANNEALING; ATOMIC FORCE MICROSCOPY; DIFFRACTION ***GRATINGS*** ; FOCUSED ION BEAM TECHNOLOGY; GALLIUM; ***ION*** ***IMPLANTATION*** ; MICROMACHINING; NANOTECHNOLOGY; SPUTTER ETCHING; SURFACE DIFFUSION; SURFACE MORPHOLOGY
ST nanoscale ripple fabrication; thermal annealing; focused ion beam milling; periodic one dimensional ripple structure; nanoscale ripple array; ***silicon(001) crystal surface*** ; ripple morphology; atomic force microscopy; gallium spikes; gallium rich precipitate; 670 degC; ***Si:Ga***
CHI Si:Ga sur, Ga sur, Si sur, Si:Ga bin, Ga bin, Si bin, Ga el, Si el, Ga dop
PHP temperature 9.43E+02 K
ET C; Ga*Si; Ga sy 2; sy 2; Si sy 2; Si:Ga; Ga doping; doped materials; Ga; Si

L7 ANSWER 111 OF 187 INSPEC (C) 2006 IEE on STN
AN 2004:8099325 INSPEC DN A2004-21-4280L-004; B2004-10-4130-059
TI Unique nonlinear optical and electronic properties of SiC:Ge waveguide for device applications.
AU Darwish, A.M. (Laser-Matter Res. Lab. Inc., Dillard Univ., Normal, AL, USA); Koplitz, B.D.; Kukhtarev, N.V.; Mitchell, O.; Haydel, R.; Gomlak, G.; Combs, R.
SO Proceedings of the SPIE - The International Society for Optical Engineering (2003) vol.5206, no.1, p.166-76. 17 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/03/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2003)5206:1L.166:UNOE;1-L
Conference: Photorefractive Fiber and Crystal Devices: Materials, Optical Properties, and Applications IX. San Diego, CA,USA, 3-4 Aug 2003
DT Conference Article; Journal
TC Practical; Experimental

CY United States
LA English
AB Using a combination of ***ion*** ***implantation*** and laser ablation techniques, a waveguide of ***ion*** ***implanted*** SiC:Ga:Ge was fabricated and was used as a CO2 laser line selector. It was observed that the CO2 laser produces a thermal ***grating*** which drives the optical selector with maximum efficiency of 40 MHz of laser offset between the 9P20 and 9P18 CO2 laser lines. Using an external electric field, the moving thermal ***grating*** produces a 45 MHz offset between the laser lines. This phenomenon will be explained using the Kukhtarev model. The threshold of the thermal damage for the waveguide and the device limiting will be presented.
CC A4280L Optical waveguides and couplers; A4262A Laser materials processing; A6180B Ultraviolet, visible and infrared radiation effects; A4255D CO/sub 2/ lasers; A4285D Optical fabrication, surface grinding; B4130 Optical waveguides; B2550B Semiconductor doping; B4360B Laser materials processing; B4320C Gas lasers
CT ELECTRO-OPTICAL EFFECTS; GALLIUM; GAS LASERS; GERMANIUM; ***ION*** ***IMPLANTATION*** ; LASER ABLATION; NONLINEAR OPTICS; OPTICAL FABRICATION; OPTICAL WAVEGUIDES; SEMICONDUCTOR THIN FILMS; ***SILICON*** COMPOUNDS; THERMO-OPTICAL EFFECTS
ST nonlinear optical properties; electronic properties; SiC:Ge waveguide; ***ion implantation*** ; laser ablation; CO2 laser line selector; ***thermal grating*** ; optical selector; laser offset; 9P20 CO2 laser lines; 9P18 CO2 laser lines; electric field; Kukhtarev model; thermal damage; thin film semiconductors; wavelength selector; 40 MHz; SiC-Ga-Ge; CO
CHI SiCGaGe ss, Ga ss, Ge ss, Si ss, C ss; CO bin, C bin, O bin
PHP frequency 4.0E+07 Hz
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; SiC:Ge; Ge doping; doped materials; Si cp; cp; C cp; C*Ga*Ge*Si; C sy 4; sy 4; Ga sy 4; Ge sy 4; Si sy 4; SiC:Ga:Ge; Ga:Ge doping; C*O; CO2; O cp; P; SiC; SiC-Ga-Ge; CO; SiCGaGe; Ga cp; Ge cp; Ga; Ge; Si; O

L7 ANSWER 112 OF 187 INSPEC (C) 2006 IEE on STN
AN 2004:8041020 INSPEC DN A2004-18-4285D-002; B2004-09-2550E-009
TI Self-organized formation of a blazed- ***grating*** -like structure on ***Si*** (100) induced by focused ion-beam scanning.
AU Yongqi Fu (Innovation In Manuf. Syst. & Technol., Singapore, Singapore); Bryan, N.K.A.; Wei Zhou
SO Optics Express (26 Jan. 2004) vol.12, no.2. 12 refs.
Collection URL: http://www.opticsexpress.org/
Published by: Opt. Soc. America
Price: CCCC 1094-4087/04/$15.00
CODEN: OPEXFF ISSN: 1094-4087
DT Journal
TC Experimental
CY United States
LA English
AB A new one-step method, which has been named self-organized formation, for microfabrication of blazed- ***grating*** -like structures after ***bombardment*** with a focused ***ion*** beam (FIB) with an ion energy of 50 keV and a beam current of 0.5 nA is presented. The structure is fabricated by the FIB by raster scanning (not by patterned scanning) upon a substrate of a ***silicon*** wafer. ***Si*** (100), with total scanning time of 14 min. With this method the parameters are unchanged during the whole process, unlike for the point-by-point direct writing technique, in which the exposure intensity or the electron- or ion-beam dose is changed for each point. The surface roughness of the structure. Ra, is 2.5 nm over an area of 1 mu m * 1 mu m. To evaluate the performance of this method we carried out a simulation, using the PCGrate program. The simulated diffraction efficiency, of diffraction order -3 working in the reflection mode, can be as much as 79.1% for the violet wavelength of 400 nm. Using a He-Ne laser as the light source produced a measured diffraction efficiency of the order of -2 of 70.4%, which is near the simulated value of 76.9% at a wavelength of 600 nm. The depth and the period of the structure can be controlled by process parameters of the FlB, such as ion energy and ion flux.
CC A4285D Optical fabrication, surface grinding; A4280F Gratings, echelles; A8160C Surface treatment and degradation in semiconductor technology; B2550E Surface treatment (semiconductor technology)
CT DIFFRACTION ***GRATINGS*** ; LIGHT DIFFRACTION; OPTICAL FABRICATION;

SELF-ASSEMBLY; ***SILICON*** ; SPUTTER ETCHING; SURFACE ROUGHNESS
ST selforganized formation; ***blazed-grating-like structure*** ; ***Si(100)*** ; focused ion-beam scanning; one-step method; microfabrication; raster scanning; ***silicon wafer substrate*** ; point-by-point direct writing technique; ion-beam dose; electron-beam dose; surface roughness; PCGrate program; simulated diffraction efficiency; diffraction order; violet wavelength; He-Ne laser; ion energy; ion flux; 50 keV; 0.5 nA; 14 min; 79.1 percent; 400 nm; 70.4 percent; 76.9 percent; 600 nm; ***Si***
CHI Si sur, Si el
PHP electron volt energy 5.0E+04 eV; current 5.0E-10 A; time 8.4E+02 s; efficiency 7.91E+01 percent; wavelength 4.0E-07 m; efficiency 7.04E+01 percent; efficiency 7.69E+01 percent; wavelength 6.0E-07 m
ET Si; Ra; He*Ne; He-Ne; B*F; FlB; F cp; cp; B cp

L7 ANSWER 113 OF 187 INSPEC (C) 2006 IEE on STN
AN 2003:7766274 INSPEC DN A2003-23-6170T-014; B2003-12-2550B-005
TI Dose dependence of carrier and heat dynamics at an ***ion*** - ***implanted*** ***silicon*** surface measured using lens-free heterodyne transient ***grating*** method.
AU Katayama, K.; Yamaguchi, M.; Sawada, T. (Dept. of Adv. Mater. Sci., Univ. of Tokyo, Chiba, Japan)
SO Journal of Applied Physics (15 Oct. 2003) vol.94, no.8, p.4904-7. 22 refs.
Doc. No.: S0021-8979(03)08919-9
Published by: AIP
Price: CCCC 0021-8979/2003/94(8)/4904(4)/$20.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(20031015)94:8L.4904:DDCH;1-3
DT Journal
TC Experimental
CY United States
LA English
AB The lens-free heterodyne transient ***grating*** method was shown to reveal the dynamics of photoexcited carriers and heat on the surface region of an ***ion*** - ***implanted*** ***silicon*** in the dose range of 1011-1015 cm-2. In addition to the fact that the detection limit of the dose was superior to that for conventional methods, several physical properties of the carrier and heat can be obtained by analyzing transient responses. Theoretical analysis provided the lifetime of carriers and thermal diffusion coefficients in the ***ion*** - ***implanted*** surface region.
CC A6170T Doping and implantation of impurities; A6180J Ion beam effects; A7220J Charge carriers: generation, recombination, lifetime, and trapping (semiconductors/insulators); A7240 Photoconduction and photovoltaic effects; photodielectric effects; A7847 Ultrafast optical measurements in condensed matter; A6630H Self-diffusion and ionic conduction in solid nonmetals; A7280C Electrical conductivity of elemental semiconductors; B2550B Semiconductor doping; B2520C Elemental semiconductors
CT CARRIER LIFETIME; ELEMENTAL SEMICONDUCTORS; HIGH-SPEED OPTICAL TECHNIQUES; ***ION*** ***IMPLANTATION*** ; PHOTOCONDUCTIVITY; SEMICONDUCTOR DOPING; ***SILICON*** ; THERMAL DIFFUSION
ST ***ion-implanted silicon surface*** ; carrier dynamics; heat dynamics; ***lens-free heterodyne transient grating method*** ; dose dependence; photoexcited carriers; carrier lifetime; thermal diffusion coefficients
CHI Si bin, Si el
ET Si

L7 ANSWER 114 OF 187 INSPEC (C) 2006 IEE on STN
AN 2003:7560810 INSPEC DN A2003-08-7847-009
TI Transient reflecting ***grating*** spectroscopy for defect analysis in surface region of semiconductors.
AU Katayama, K.; Donen, H.; Sawada, T. (Dept. of Adv. Mater. Sci., Univ. of Tokyo, Japan)
SO Review of Scientific Instruments (Jan. 2003) vol.74, no.1, p.901-3. 19 refs.
Doc. No.: S0034-6748(03)08601-5
Published by: AIP
Price: CCCC 0034-6748/2003/74(1)/901(3)/$19.00
CODEN: RSINAK ISSN: 0034-6748
SICI: 0034-6748(200301)74:1L.901:TRGS;1-2
DT Journal
TC Experimental

CY United States
LA English
AB Ultrafast transient reflecting ***grating*** (TRG) spectroscopy was utilized for defect analysis in the surface region of ***ion*** - ***implanted*** ***silicon*** for the ***implantation*** range from 1011 to 1015 cm-2. To deduce signals due to trapped carriers at defect states, the TRG spectra at the delay time of 30 ps were measured because ultrafast carrier dynamics such as many-body recombination had finished before the delay time. According to the dose quantity, the peak of the interband transition was affected and also defect-related transitions emerged. Using this technique, implantation damage can be detected for samples with their dose larger than 1012 cm-2. It was proposed that TRG spectroscopy can be used as a novel analytical method for characterizing defects in the surface region of semiconductors.
CC A7847 Ultrafast optical measurements in condensed matter; A7840E Visible and ultraviolet spectra of elemental semiconductors; A6170T Doping and implantation of impurities; A6180J Ion beam effects; A7155E Impurity and defect levels in elemental semiconductors; A7325 Surface conductivity and carrier phenomena; A7320H Surface impurity and defect levels; energy levels of adsorbed species
CT DEFECT STATES; ELEMENTAL SEMICONDUCTORS; ION BEAM EFFECTS; ***ION*** ***IMPLANTATION*** ; PHOTOEXCITATION; REFLECTIVITY; ***SILICON*** ; SURFACE RECOMBINATION; SURFACE STATES; TIME RESOLVED SPECTRA; VISIBLE SPECTRA
ST ***transient reflecting grating spectroscopy*** ; semiconductor surface region; ***ion-implanted silicon*** ; defect analysis; ultrafast spectroscopy; trapped carriers; defect states; ultrafast carrier dynamics; many-body recombination; interband transition; defect-related transitions; implantation damage; photoexcited carriers; dose quantity dependence; crossed pump pulses; reflectance spectra; Auger recombination; ***Si***
CHI Si sur, Si el
ET Si

L7 ANSWER 115 OF 187 INSPEC (C) 2006 IEE on STN
AN 2002:7397696 INSPEC DN A2002-22-6842-002
TI Investigation of the dynamics of phase transitions on ***silicon*** surface at light pulse heating.
AU Fattakhov, Ya.V.; Galyautdinov, M.F.; L'vova, T.N.; Zakharov, M.V.; Khaibullin, I.B. (Physicotech. Inst., Acad. of Sci., Kazan, Russia)
SO Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4605, p.399-408. 9 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0277-786X/01/$15.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2001)4605L.399:IDPT;1-Z
Conference: PECS 2001: Photon Echo and Coherent Spectroscopy. Novgorod, Russia, 20-24 June 2001
Sponsor(s): SPIE
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB The nucleation and growth of local molten regions (LMRs) during light irradiation was detected using a high-speed camera and long-focus microscope. In situ dependences of sizes and density (quantity per cm-2) of LMRs are interpreted in the framework of the following model. A great amount of heat is transferred to the semiconductor surface during light pulse irradiation. This process is nonstationary and the heat is not distributed homogeneously over the thickness of the sample. As a result, a specific short-lived state is formed, in which the semiconductor surface is superheated in the solid-state phase with respect to the equilibrium melting temperature. Some surface areas, which contain the defects, begin to melt. The temperature of these local molten regions immediately decreases down to the equilibrium melting temperature. The created LMRs begin to absorb the heat from neighboring superheated solid regions. As a result, the temperature of superheated regions decreases down to the equilibrium melting point. No new local molten regions are formed and the sizes of existing local molten regions increase due to absorption of the energy of light pulse. To study the main features of local melting in more detail in-situ investigations of the mechanism of this effect were carried out at incoherent light irradiation with different pulse durations and irradiation power densities. The latter of our results agree with the

superheating model. Also the dynamics of phase transitions on the surface of implanted ***silicon*** for different regimes of light pulses is investigated using a high-speed camera and special diffraction ***gratings*** . The diffraction ***gratings*** were formed using ***ion*** ***implantation*** and the effect of local melting. The dynamics of diffraction during and after the light pulse irradiation was studied.

CC A6842 Surface phase transitions and critical phenomena; A6470D Solid-liquid transitions; A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A6180B Ultraviolet, visible and infrared radiation effects

CT DIFFRACTION ***GRATINGS*** ; HEAT TRANSFER; HIGH-SPEED OPTICAL TECHNIQUES; ***ION*** ***IMPLANTATION*** ; LASER BEAM EFFECTS; MELTING; NUCLEATION; RADIATION EFFECTS; ***SILICON*** ; SURFACE PHASE TRANSFORMATIONS

ST ***silicon surface*** ; light pulse heating; phase transition dynamics; nucleation; growth; local molten regions; light irradiation; high-speed camera; long-focus microscope; sizes; density; semiconductor surface; nonstationary process; short-lived state; solid-state phase; equilibrium melting temperature; surface areas; defects; neighboring superheated solid regions; absorption; incoherent light irradiation; pulse durations; irradiation power densities; surface phase transitions; ***diffraction*** *** gratings*** ; ***ion implantation*** ; local melting; flash lamps; ***Si***

CHI Si sur, Si el

ET Si

L7 ANSWER 116 OF 187 INSPEC (C) 2006 IEE on STN

AN 2002:7367379 INSPEC DN B2002-10-7230M-063; C2002-10-3240P-004

TI ***Si*** micromachined optical encoder based on ***grating*** imaging.

AU Hane, K.; Endo, T.; Ito, Y.; Sasaki, M. (Dept. Mechatronics & Precision Eng., Tohoku Univ., Sendai, Japan)

SO TRANSDUCERS '01. EUROSENSORS XV. 11th International Conference on Solid-State Sensors and Actuators. Digest of Technical Papers
Editor(s): Obermeier, E.
Berlin, Germany: Springer-Verlag, 2001. p.552-5 vol.1 of 2 vol. 1807 pp. 9 refs.
Conference: Munich, Germany, 10-14 June 2001
ISBN: 3-540-42150-5

DT Conference Article

TC Application; Practical; Theoretical; Experimental

CY Germany, Federal Republic of

LA English

AB Using micromachining technique, an integrated optical encoder has been fabricated for the measurement of linear displacement. ***Grating*** imaging phenomenon has been used in the displacement sensing. The index ***grating*** of the sensor consists of the transmission type ***Si*** grids, which are etched through by the reactive ion plasma. On the ***Si*** grids, arrays of line photo-detectors are installed by ***ion*** ***implantation*** . The two ***gratings*** , photo-detectors, light emitting diode, and preamplifier circuit chip are stacked perpendicularly to the optical axis. The encoder signal with a high contrast has been obtained from the integrated sensor.

CC B7230M Microsensors; B2550E Surface treatment (semiconductor technology); B7320C Spatial variables measurement; B4145 Micro-optical devices and technology; B2575F Fabrication of micromechanical devices; C3240P Microsensors; C3240F Nonelectric transducers and sensing devices

CT DISPLACEMENT MEASUREMENT; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; LIGHT EMITTING DIODES; MICRO-OPTICS; MICROMACHINING; MICROSENSORS; OPTICAL SENSORS; PHOTODETECTORS; PREAMPLIFIERS; SPUTTER ETCHING

ST micromachined optical encoder; ***Si*** ; ***grating imaging*** ; linear displacement; displacement sensing; transmission type grids; reactive ion plasma; line photo-detectors; ***ion implantation*** ; light emitting diode; preamplifier circuit chip; optical axis; encoder signal; contrast

CHI Si int, Si el

ET Si

L7 ANSWER 117 OF 187 INSPEC (C) 2006 IEE on STN

AN 2002:7332546 INSPEC DN A2002-17-7847-004

TI   Transient reflecting ***grating*** spectroscopy for defect analysis of surface region of semiconductors.
AU   Donen, H.; Katayama, K.; Sawada, T. (Dept. of Adv. Mater. Sci., Univ. of Tokyo, Japan)
SO   Journal of Applied Physics (1 Aug. 2002) vol.92, no.3, p.1367-71. 28 refs.
     Doc. No.: S0021-8979(02)05716-X
     Published by: AIP
     Price: CCCC 0021-8979/2002/92(3)/1367(5)/$19.00
     CODEN: JAPIAU ISSN: 0021-8979
     SICI: 0021-8979(20020801)92:3L.1367:TRGS;1-M
DT   Journal
TC   Experimental
CY   United States
LA   English
AB   Ultrafast transient reflecting ***grating*** (TRG) spectroscopy was applied to investigate the influence of various defect states on ultrafast carrier dynamics of up to 3 ps duration in an ***ion*** - ***implanted*** ***silicon*** surface region. The TRG spectra revealed the energy-state distribution of two kinds of defect states, and it was observed that photoexcited carriers were trapped in each state depending on annealing time. It was proposed that TRG spectroscopy can be used as an analytical method for characterizing defects in the surface region of semiconductors.
CC   A7847 Ultrafast optical measurements in condensed matter; A7320H Surface impurity and defect levels; energy levels of adsorbed species; A6170T Doping and implantation of impurities; A6170A Annealing processes
CT   ANNEALING; DEFECT STATES; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; ***SILICON*** ; SURFACE STATES; TIME RESOLVED SPECTRA
ST   semiconductor; ***ultrafast transient reflecting grating spectroscopy*** ; defect states; carrier dynamics; ***ion-implanted silicon surface*** ; energy state distribution; annealing; 3 ps; ***Si***
CHI Si sur, Si el
PHP time 3.0E-12 s
ET   Si

L7   ANSWER 118 OF 187 INSPEC (C) 2006 IEE on STN
AN   2002:7206315 INSPEC DN A2002-08-6180B-002
TI   Study of phase transition dynamics on semiconductor surface at light pulse irradiation.
AU   Fattakhov, Y.V.; Galyautdinov, M.F.; Lvova, T.N.; Khalibullin, I.B. (Kazan Physical-Technical Inst., Acad. of Sci., Kazan, Russia)
SO   Proceedings of the SPIE - The International Society for Optical Engineering (2001) vol.4183, p.531-8. 5 refs.
     Published by: SPIE-Int. Soc. Opt. Eng
     Price: CCCC 0277-786X/01/$15.00
     CODEN: PSISDG ISSN: 0277-786X
     SICI: 0277-786X(2001)4183L.531:SPTD;1-4
     Conference: 24th International Congress on High-Speed Photography and Photonics. Sendai, Japan, 24-29 Sept 2000
     Sponsor(s): SPIE
DT   Conference Article; Journal
TC   Experimental
CY   United States
LA   English
AB   The dynamics of anisotropic local melting of monocrystalline and implanted ***silicon*** at different regimes of light pulse irradiation was investigated. The results of in situ investigation of local melting of monocrystalline ***silicon*** were carried out for the first time using special long-focus microscope and high-speed camera The time dependences of the density and sizes of local molten regions were systematically measured We explain the increase of the size of LMRs during short time by superheating of the semiconductor in the solid state with respect to the equilibrium melting point. Due to superheating, conditions arise to overcome the barrier for the formation of the liquid phase nuclei. The dynamics of anisotropic local melting of implanted ***silicon*** was investigated using several optical methods and special diffraction ***gratings*** . The intensity of diffraction picture depends on the contrast of this periodical structure, i.e. from difference of crystalline and amorphous fragments of ***gratings*** . The dynamics of diffraction effectivity daring and after the power light pulse was registered using high-speed camera. Three qualitative stages: solid-state

recrystallization, local melting and liquid-phase recrystallization were
observed experimentally.

CC A6180B Ultraviolet, visible and infrared radiation effects; A6470D
Solid-liquid transitions; A6842 Surface phase transitions and critical
phenomena; A6170A Annealing processes

CT ELEMENTAL SEMICONDUCTORS; INCOHERENT LIGHT ANNEALING; ***ION***
IMPLANTATION ; MELTING; OPTICAL MICROSCOPY; RADIATION EFFECTS;
SILICON ; SURFACE PHASE TRANSFORMATIONS

ST anisotropic local melting dynamics; ***monocrystalline silicon*** ;
light pulse irradiation; high-speed camera; long-focus microscopy; time
dependences; superheating; equilibrium melting point; ***implanted***
*** silicon*** ; diffraction picture; periodical structure; solid-state
recrystallization; liquid-phase recrystallization; phase transition
dynamics; ***Si***

CHI Si sur, Si el

ET Si

L7 ANSWER 119 OF 187 INSPEC (C) 2006 IEE on STN

AN 2001:7071232 INSPEC DN A2001-23-7855-010

TI ***Si*** -doped luminescence ***gratings*** .

AU Heitmann, J. (Max-Plack-Inst. fur Mikrostrukturphys. Exp. Dept. II, Halle,
Germany); McCallum, J.C.; Meijer, J.; Stephan, A.; Butz, T.; Zacharias, M.

SO Nuclear Instruments & Methods in Physics Research, Section B (Beam
Interactions with Materials and Atoms) (July 2001) vol.181, p.263-7. 16
refs.
Doc. No.: S0168-583X(01)00367-6
Published by: Elsevier
Price: CCCC 0168-583X/2001/$20.00
CODEN: NIMBEU ISSN: 0168-583X
SICI: 0168-583X(200107)181L.263:DLG;1-1
Conference: 7th International Conference on Nuclear Microprobe Technology
and Applications. Bordeaux, France, 10-15 Sept 2000

DT Conference Article; Journal

TC Experimental

CY Netherlands

LA English

AB We report on the fabrication of ordered arrays of dots formed by
Si implantation through a grid into SiO2 using the Bochum
high-energy ***ion*** projector. Arrays of ***Si*** -
implanted dots with dimensions in the micrometer and submicrometer
range have been made. The samples show a strong red photoluminescence at
room temperature. By the combination of mu -photoluminescence measurements
and atomic force microscopy investigations optical and structural
characterization of the produced structures was possible. Additional
investigations by high-resolution transmission electron microscopy, X-ray
diffraction and temperature-dependent photoluminescence on conventionally
implanted samples have been performed for comparison.

CC A7855C Photoluminescence in elemental semiconductors; A4280F Gratings,
echelles; A6170T Doping and implantation of impurities

CT ATOMIC FORCE MICROSCOPY; DIFFRACTION ***GRATINGS*** ; ELEMENTAL
SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; NANOSTRUCTURED
MATERIALS; PHOTOLUMINESCENCE; ***SILICON*** ; TRANSMISSION ELECTRON
MICROSCOPY; X-RAY DIFFRACTION

ST ***luminescence grating*** ; fabrication; ***Si nanodot array*** ;
ion implantation ; SiO2 grid; Bochum high-energy ion projector;
photoluminescence; micro-photoluminescence; atomic force microscopy;
high-resolution transmission electron microscopy; X-ray diffraction;
temperature dependence; ***Si doping*** ; ***SiO2:Si***

CHI SiO2:Si bin, SiO2 bin, O2 bin, Si bin, O bin, Si el, Si dop

ET Si; O*Si; SiO2; Si cp; cp; O cp; O sy 2; sy 2; Si sy 2; SiO2:Si; Si
doping; doped materials; SiO; O

L7 ANSWER 120 OF 187 INSPEC (C) 2006 IEE on STN

AN 2001:7054691 INSPEC DN A2001-21-4280F-013

TI In situ investigation of phase transitions of implanted ***silicon***
at powerful light irradiation.

AU Fattakhov, Ya.V.; Galyautdinov, M.F.; L'vova, T.N.; Khaibullin, I.B.
(Acad. of Sci., Kazan, Russia)

SO Vacuum (16 Aug. 2001) vol.63, no.4, p.649-55. 10 refs.
Doc. No.: S0042-207X(01)00253-6
Published by: Elsevier
Price: CCCC 0042-207X/2001/$20.00

CODEN: VACUAV ISSN: 0042-207X
SICI: 0042-207X(20010816)63:4L.649:SIPT;1-Z
Conference: International Symposium 'Ion Implantation and Other Applications of Ions and Electrons - ION 2000'. Kazimierz Dolny o/Wisla, Poland, 12-15 June 2000
DT Conference Article; Journal
TC Experimental
CY United Kingdom
LA English
AB The in situ investigations of anisotropic local melting of implanted and monocrystalline ***silicon*** during irradiation by powerful light pulses using a high-speed camera are presented. The methods of formation of special diffraction ***gratings*** are presented. The features of application of the ***gratings*** for the in situ investigation of structural and phase transitions of implanted ***silicon*** are discussed. One-dimensional ***gratings*** were formed by ***ion*** ***implantation*** and a special regime of laser annealing. The two-dimensional ***gratings*** were formed by ***ion*** ***implantation*** through a metallic net shadow-mark or using photolithography. Also, the first results of in situ investigation of the effect of anisotropic local melting of monocrystalline ***silicon*** are presented. In situ time dependences of density (quantity per cm2) of local molten regions are interpreted in the frame of a model which describes the existence of a short-lived metastable state, characterized by superheating in the solid phase. The experiments and theoretical calculations crucial to clarify the mechanism of this effect are discussed.
CC A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A6180J Ion beam effects; A6180B Ultraviolet, visible and infrared radiation effects; A6170A Annealing processes; A6842 Surface phase transitions and critical phenomena
CT DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; HEAT TRANSFER; ***ION*** ***IMPLANTATION*** ; LASER BEAM ANNEALING; MELTING; PHOSPHORUS; PHOTOLITHOGRAPHY; RADIATION EFFECTS; ***SILICON*** ; SURFACE PHASE TRANSFORMATIONS
ST phase transitions; ***implanted silicon*** ; light irradiation; anisotropic local melting; ***monocrystalline silicon*** ; ***diffraction gratings*** ; structural transition; ***one-dimensional*** *** gratings*** ; ***ion implantation*** ; laser annealing; metallic net shadow-mark; photolithography; local molten region density; short-lived metastable state; solid phase superheating; ***Si:P***
CHI Si:P sur, Si sur, P sur, Si:P bin, Si bin, P bin, Si el, P el, P dop
ET In; P*Si; Si:P; P doping; doped materials; Si; P

L7 ANSWER 121 OF 187 INSPEC (C) 2006 IEE on STN
AN 2001:7048800 INSPEC DN B2001-11-2550B-006
TI Pattern writing by implantation in a large-scale PSII system with planar inductively coupled plasma source.
AU Lingling Wu (Appl. Sci. Dept., Coll. of William & Mary, Williamsburg, VA, USA); Hongjun Gao; Manos, D.M.
SO Materials Development for Direct Write Technologies. Symposium (Materials Research Society Symposium Proceedings Vol.624)
Editor(s): Chrisey, D.B.; Gamota, D.R.; Helvajian, H.; Taylor, D.P.
Warrendale, PA, USA: Mater. Res. Soc, 2000. p.205-10 of xiv+283 pp. 12 refs.
Conference: San Francisco, CA, USA, 24-26 April 2000
ISBN: 1-55899-532-3
DT Conference Article
TC Practical; Theoretical; Experimental
CY United States
LA English
AB A large-scale plasma source immersion ***ion*** ***implantation*** (PSII) system with planar coil RFI plasma source has been used to study an inkless, deposition-free, mask-based surface conversion patterning as an alternative to direct writing techniques on large-area substrates by implantation. The apparatus has a 0.61 m ID and 0.51 m tall chamber, with a base pressure in the 10-8 torr range, making it one of the largest PSII presently available. The system uses a 0.43 m ID planar RF antenna to produce dense plasma capable of large-area uniform materials treatment. Metallic and semiconductor samples have been implanted through masks to produce small geometric patterns of interest for device manufacturing. ***Si*** ***gratings*** were also implanted to study application to

smaller features. Samples are characterized by AES, TEM and variable-angle spectroscopic ellipsometry. Composition depth profiles obtained by AES and VASE are compared. Measured lateral and depth profiles are compared to the mask features to assess lateral diffusion. Pattern transfer fidelity, and wall-effects. The paper also presents the results of MAGIC EM particle-in-cell FDTD plasma physics process simulation code calculations of the flux and angle of ion trajectories through the boundary layer predicting the magnitude of flux as a function of 3D location on objects in the expanding sheath.
CC B2550B Semiconductor doping; B2550G Lithography (semiconductor technology); B2570 Semiconductor integrated circuits; B2550X Semiconductor process modelling and simulation; B0290Z Other numerical methods
CT AUGER ELECTRON SPECTRA; ELLIPSOMETRY; FINITE DIFFERENCE TIME-DOMAIN ANALYSIS; INTEGRATED CIRCUIT MEASUREMENT; ***ION*** ***IMPLANTATION*** ; MASKS; PLASMA MATERIALS PROCESSING; PLASMA RADIOFREQUENCY HEATING; SEMICONDUCTOR PROCESS MODELLING; TRANSMISSION ELECTRON MICROSCOPY
ST pattern writing; implantation; large-scale PSII system; planar inductively coupled plasma source; ***large-scale plasma source immersion ion*** *** implantation system*** ; planar coil RFI plasma source; inkless deposition-free mask-based surface conversion patterning; direct writing techniques; large-area substrates; chamber size; base pressure; planar RF antenna; dense plasma; large-area uniform materials treatment; semiconductor samples; metallic samples; masks; geometric patterns; device manufacturing; ***Si gratings*** ; feature size; AES; TEM; variable-angle spectroscopic ellipsometry; composition depth profiles; VASE; depth profiles; lateral profiles; pattern transfer fidelity; mask features; lateral diffusion; wall-effects; MAGIC EM particle-in-cell FDTD plasma physics process simulation; ion trajectory angle; ion flux; boundary layer; ion flux magnitude; expanding plasma sheath; 0.61 m; 0.51 m; 0.00001 mtorr; 0.43 m
PHP size 6.1E-01 m; size 5.1E-01 m; pressure 1.3E-06 Pa; size 4.3E-01 m
ET Si; D

L7 ANSWER 122 OF 187 INSPEC (C) 2006 IEE on STN
AN 2001:7008207 INSPEC DN A2001-18-7860F-005; B2001-09-4260-011
TI Efficient blue light emission from ***silicon*** : the first integrated ***Si*** -based optocoupler.
AU Rebohle, L. (Inst. fur Ionenstrahlphysik und Materialforschung, Forschungszentrum Rossendorf eV, Dresden, Germany); von Borany, J.; Borchert, D.; Frob, H.; Gebel, T.; Helm, M.; Moller, W.; Skorupa, W.
SO Electrochemical and Solid-State Letters (July 2001) vol.4, no.7, p.G57-60. 23 refs.
Doc. No.: S1099-0062(01)00707-6
Published by: Electrochem. Soc
Price: CCCC 1099-0062/2001/4(7)/57/4/$7.00
CODEN: ESLEF6 ISSN: 1099-0062
SICI: 1099-0062(200107)4:7L.g57:EBLE;1-7
DT Journal
TC Practical; Experimental
CY United States
LA English
AB We present the first all- ***silicon*** integrated optocoupler, whose fabrication, using ***ion*** ***implantation*** into SiO2, is completely compatible with standard ***Si*** technology. It is based on Ge-implanted SiO2 layers as light emitter exhibiting bright blue-violet electroluminescence light with a record wall-plug efficiency of 0.5%. The electroluminescence is explained with a model in which electrons enter the SiO2 layer via tunnel injection and excite the luminescence centers by impact excitation or field ionization. A radiative T1-S0 transition of these luminescence centers then causes the observed electroluminescence. Finally, we show that these optocoupling devices hold great promise for integrated optoelectronic applications, especially in the field of sensor and biotechnology.
CC A7860F Electroluminescence (condensed matter); A6170T Doping and implantation of impurities; A4280L Optical waveguides and couplers; A4281M Fibre couplers and connectors; A7865P Optical properties of other inorganic semiconductors and insulators (thin films/low-dimensional structures); B4260 Electroluminescent devices; B4270 Integrated optoelectronics
CT ELECTROLUMINESCENCE; ELEMENTAL SEMICONDUCTORS; GERMANIUM; INTEGRATED OPTOELECTRONICS; ***ION*** ***IMPLANTATION*** ; LIGHT EMITTING

DEVICES; LUMINESCENT DEVICES; OPTICAL ***COUPLERS*** ; ***SILICON*** ; ***SILICON*** COMPOUNDS
ST efficient blue light emission; ***integrated Si-based optocoupler*** ; ***ion implantation into SiO2*** ; Ge-implanted SiO2 layers; bright blue-violet electroluminescence light; wall-plug efficiency; tunnel injection; luminescence centers; impact excitation; field ionization; 0.5 percent; ***Si-SiO2:Ge***
CHI Si-SiO2:Ge int, SiO2:Ge int, SiO2 int, Ge int, O2 int, Si int, O int, SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Si el, Ge dop
PHP efficiency 5.0E-01 percent
ET Si; O*Si; SiO2; Si cp; cp; O cp; Ge; S*T; T1-S0; Ge*O*Si; Ge sy 3; sy 3; O sy 3; Si sy 3; SiO2:Ge; Ge doping; doped materials; Si-SiO2:Ge; O sy 2; sy 2; Si sy 2; SiO; Si-SiO; O

L7 ANSWER 123 OF 187 INSPEC (C) 2006 IEE on STN
AN 2001:6980420 INSPEC DN A2001-16-0630C-007; B2001-08-7320C-027
TI A compact optical encoder with micromachined photodetector.
AU Hane, K.; Endo, T.; Ito, Y.; Sasaki, M. (Dept. of Mechatronics & Precision Eng., Tohoku Univ., Sendai, Japan)
SO Journal of Optics A: Pure and Applied Optics (May 2001) vol.3, no.3, p.191-5. 8 refs.
Doc. No.: S1464-4258(01)19068-9
Published by: IOP Publishing
Price: CCCC 1464-4258/2001/030191+05$30.00
CODEN: JOAOF8 ISSN: 1464-4258
SICI: 1464-4258(200105)3:3L.191:COEW;1-F
DT Journal
TC New Development; Practical; Theoretical; Experimental
CY United Kingdom
LA English
AB A compact optical encoder has been fabricated using a micromachining technique for the measurement of linear displacement. The index ***grating*** for detecting the Moire signal from the superimposed ***gratings*** consists of transmission type ***silicon*** grids, which are etched through by the reactive ion plasma. An array of line photodetectors is installed on the ***silicon*** grids by ***ion*** ***implantation*** . A scale ***grating*** is illuminated by the light passing through the slits of the transmission index ***grating*** , and thus the light source can be placed just behind the index ***grating*** . Therefore the structure of the proposed optical encoder is compact. In the experiment, the second order ***grating*** imaging phenomenon under incoherent illumination has been applied to displacement sensing. An encoder signal with high contrast is obtained at a large air gap between the two ***gratings*** .
CC A0630C Spatial variables measurement; A0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection); A4280F Gratings, echelles; A0760L Optical interferometry; A8160C Surface treatment and degradation in semiconductor technology; A4282 Integrated optics; B7320C Spatial variables measurement; B7230C Photodetectors; B2550E Surface treatment (semiconductor technology); B2575F Fabrication of micromechanical devices; B4140 Integrated optics
CT DIFFRACTION ***GRATINGS*** ; DISPLACEMENT MEASUREMENT; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; MICROMACHINING; MOIRE FRINGES; OPTICAL IMAGES; OPTICAL SENSORS; PHOTODETECTORS; ***SILICON*** ; SPUTTER ETCHING
ST compact optical encoder; micromachined photodetector; linear displacement measurement; ***index grating*** ; Moire signal; ***superimposed*** *** gratings*** ; ***transmission type silicon grids*** ; reactive ion plasma; etching; line photodetector array; ***ion implantation*** ; ***scale grating*** ; ***transmission index grating slits*** ; light source; ***second order grating imaging phenomenon*** ; incoherent illumination; displacement sensing; encoder signal; high contrast; large air gap; ***Si***
CHI Si int, Si el
ET Si

L7 ANSWER 124 OF 187 INSPEC (C) 2006 IEE on STN
AN 2001:6932293 INSPEC DN A2001-13-4260B-001; B2001-07-4320J-010
TI Virtual mesa and spoiler midinfrared angled- ***grating*** distributed feedback lasers fabricated by ***ion*** ***bombardment*** .
AU Bartolo, R.E.; Bewley, W.W.; Felix, C.L.; Vurgaftman, I.; Lindle, J.R.;

Meyer, J.R.; Knies, D.L.; Grabowski, K.S. (Naval Res. Lab., Washington, DC, USA); Turner, G.W.; Manfra, M.J.
SO Applied Physics Letters (28 May 2001) vol.78, no.22, p.3394-6. 12 refs.
Doc. No.: S0003-6951(01)05322-0
Published by: AIP
Price: CCCC 0003-6951/2001/78(22)/3394(3)/$18.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(20010528)78:22L.3394:VMSM;1-E
DT Journal
TC Practical; Experimental
CY United States
LA English
AB It is demonstrated that the suppression of parasitic Fabry-Perot-like lasing modes substantially enhances the beam quality and brightness of wide-stripe angled- ***grating*** distributed feedback lasers emitting in the midwave infrared. The direct facet-to-facet gain path is blocked by loss regions that are created by ***ion*** ***bombardment*** with 900 keV ***silicon*** ***ions*** . Both virtual mesa structures, in which loss regions bound both sides of the 300- mu m-wide angled gain path, and spoiler structures, in which loss is induced only near the facets, decrease the etendue of the output by nearly an order of magnitude, and increase the brightness by up to a factor of 3.
CC A4260B Design of specific laser systems; A4255P Lasing action in semiconductors; A4285D Optical fabrication, surface grinding; A4280F Gratings, echelles; A6180J Ion beam effects; B4320J Semiconductor lasers; B2550R Radiation effects on semiconductor devices
CT BRIGHTNESS; DIFFRACTION ***GRATINGS*** ; DISTRIBUTED FEEDBACK LASERS; ION BEAM EFFECTS; LASER BEAMS; LASER MODES; LASER TRANSITIONS; OPTICAL FABRICATION; QUANTUM WELL LASERS
ST ***spoiler midinfrared angled-grating distributed feedback lasers*** ; ***ion bombardment*** ; parasitic Fabry-Perot-like lasing mode suppression; beam quality; brightness; ***wide-stripe angled-grating*** *** distributed feedback lasers*** ; midwave infrared; direct facet-to-facet gain path; loss regions; ***900 keV silicon ions*** ; virtual mesa structures; spoiler structures; facets; 900 keV; 300 mum; ***Si*** ; InAs-GaInSb-InAs-AlAsSb
CHI Si el; InAs-GaInSb-InAs-AlAsSb int, AlAsSb int, GaInSb int, InAs int, Al int, As int, Ga int, In int, Sb int, AlAsSb ss, GaInSb ss, Al ss, As ss, Ga ss, In ss, Sb ss, InAs bin, As bin, In bin
PHP electron volt energy 9.0E+05 eV; size 3.0E-04 m
ET Si; Al*As*Ga*In*Sb; Al sy 5; sy 5; As sy 5; Ga sy 5; In sy 5; Sb sy 5; InAs; In cp; cp; As cp; GaInSb; Ga cp; Sb cp; AlAsSb; Al cp; InAs-GaInSb-InAs-AlAsSb; Al*As*Sb; Al sy 3; sy 3; As sy 3; Sb sy 3; Ga*In*Sb; Ga sy 3; In sy 3; As*In; As sy 2; sy 2; In sy 2; Al; As; Ga; In; Sb

L7 ANSWER 125 OF 187 INSPEC (C) 2006 IEE on STN
AN 2000:6751948 INSPEC DN A2000-24-4281B-001; B2000-12-4125-029
TI ***Ion*** - ***implantation*** -induced densification in silica-based glass for fabrication of optical fiber ***gratings*** .
AU Fujimaki, M.; Nishihara, Y.; Ohki, Y. (Dept. of Electr. Eng. & Comput. Eng., Waseda Univ., Tokyo, Japan); Brebner, J.L.; Roorda, S.
SO Journal of Applied Physics (15 Nov. 2000) vol.88, no.10, p.5534-7. 30 refs.
Doc. No.: S0021-8979(00)03922-0
Published by: AIP
Price: CCCC 0021-8979/2000/88(10)/5534(4)/$17.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(20001115)88:10L.5534:IIDS;1-W
DT Journal
TC Experimental
CY United States
LA English
AB ***Ion*** ***implantation*** induces a refractive index increase in silica-based glass, which is mainly due to densification of the glass. The refractive index increase can be used to fabricate optical fiber ***gratings*** that are formed with periodic refractive index modulation in the core of an optical fiber. In this article, the generation mechanism of the densification has been investigated through measurements of thickness changes of silica glass induced by proton and He2+ ***ion*** ***implantation*** . Furthermore, fabrication of the optical fiber ***grating*** using the refractive index increase has been demonstrated.

From the result, ideal implantation conditions to fabricate the
gratings are discussed.
CC A4281B Optical fibre fabrication, cladding, splicing, joining; A6140D Structure of glasses; A8120E Powder techniques, compaction and sintering; A8120P Preparation of glasses; A6180J Ion beam effects; A4281H Gradient-index (GRIN) fibre devices and techniques; A7820D Optical constants and parameters (condensed matter); A4280F Gratings, echelles; B4125 Fibre optics; B0570 Glasses (engineering materials science)
CT DENSIFICATION; DIFFRACTION ***GRATINGS*** ; GLASS; GRADIENT INDEX OPTICS; ***ION*** ***IMPLANTATION*** ; OPTICAL FIBRE FABRICATION; REFRACTIVE INDEX; ***SILICON*** COMPOUNDS
ST ***ion implantation-induced densification*** ; silica-based glass; ***optical fiber gratings fabrication*** ; refractive index increase; periodic refractive index modulation; thickness changes; proton implantation; ***He2+ ion implantation*** ; implantation conditions; SiO2:He; SiO2:H
CHI SiO2:He ss, SiO2 ss, He ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, He el, He dop; SiO2:H ss, SiO2 ss, O2 ss, Si ss, H ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, H el, H dop; SiO2 ss, He ss, O2 ss, Si ss, O ss, He el, He dop; SiO2 ss, O2 ss, Si ss, H ss, O ss, H el, H dop
ET He; He2+; He ip 2; ip 2; He*O*Si; He sy 3; sy 3; O sy 3; Si sy 3; SiO2:He; He doping; doped materials; Si cp; cp; O cp; H*O*Si; SiO2:H; H doping; O*Si; SiO; O; Si; H

L7 ANSWER 126 OF 187 INSPEC (C) 2006 IEE on STN
AN 2000:6729608 INSPEC DN A2000-22-0130C-031; B2000-11-0100-061
TI ***Silicon*** -based Optoelectronics II.
SO Proceedings of the SPIE - The International Society for Optical Engineering (2000) vol.3953
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 00/$15.00
CODEN: PSISDG ISSN: 0277-786X
Conference: Silicon-based Optoelectronics II. San Jose, CA, USA, 28 Jan 2000
Sponsor(s): SPIE
DT Conference Proceedings; Journal
CY United States
LA English
AB The following topics were dealt with: development and prospects of ***SOI*** -based photonic components for optical CDMA application; arrayed waveguide ***grating*** demultiplexers in ***SOI*** ; optical sources, integrated optical detectors and optical waveguides in standard ***silicon*** CMOS integrated circuitry; tunneling-induced electroluminescence from MOS structures on ***Si*** ; self-assembled InAs/ ***Si*** quantum dot stacks grown by molecular beam epitaxy; light-emitting diodes fabricated in ***silicon*** /iron disilicide; recent advances in miniaturization of infrared spectrometers; near-IR wavemeter based on an array of polycrystalline Ge-on- ***Si*** photodetectors; avalanche multiplication and noise in submicron ***Si*** p-i-n diodes; Ge-on- ***Si*** high-responsivity near-IR photodetectors; fabrication and characterization of porous ***silicon*** integrated waveguides; low-loss small-cross-section ***Si*** -on- ***Si*** rib waveguides with high-confining ***ion*** - ***implanted*** lower cladding; measurement and exploitation of the thermo-optic effect in ***silicon*** for light switching in optoelectronic integrated circuits; micromachined ***silicon*** actuators with low driving voltage and high accuracy for optical switches and tunable filters; mechanical properties of PECVD ***silicon*** oxide films suitable for integrated optics applications; synthesis, photo, and pyrolytic properties of polysilane photoresists; high quantum efficiency diode photodetector based on ultrathin InGaAs-on- ***Si*** films.
CC A0130C Conference proceedings; A7865H Optical properties of elemental semiconductors (thin films/low-dimensional structures); A7340Q Electrical properties of metal-insulator-semiconductor structures; A0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection); A4280L Optical waveguides and couplers; A4282 Integrated optics; A7860F Electroluminescence (condensed matter); A0765G IR spectroscopy and spectrometers; A4265P Optical bistability, multistability and switching; A4280S Optical communication devices; A7820N Thermo-optical effects (condensed matter); A0720 Thermal instruments and techniques; B0100 General electrical engineering topics; B2520C Elemental semiconductors; B2530F Metal-insulator-semiconductor structures; B6150E

Multiple access communication; B6260M Multiplexing and switching in optical communication; B7230C Photodetectors; B4130 Optical waveguides; B4140 Integrated optics; B2570D CMOS integrated circuits; B4220 Luminescent materials; B2530C Semiconductor superlattices, quantum wells and related structures; B4260D Light emitting diodes; B1310 Waveguides and striplines; B4180 Optical logic devices and optical computing techniques; B4340P Optical bistability, multistability and switching; B4270 Integrated optoelectronics; B8380M Microactuators; B2575F Fabrication of micromechanical devices

CT CMOS INTEGRATED CIRCUITS; CODE DIVISION MULTIPLE ACCESS; DEMULTIPLEXING EQUIPMENT; ELECTROLUMINESCENCE; ELEMENTAL SEMICONDUCTORS; INFRARED DETECTORS; INFRARED SPECTROMETERS; INTEGRATED OPTICS; INTEGRATED OPTOELECTRONICS; LIGHT EMITTING DIODES; MICROACTUATORS; MICROMACHINING; MIS STRUCTURES; OPTICAL PLANAR WAVEGUIDES; OPTICAL SWITCHES; PHOTODETECTORS; POROUS SEMICONDUCTORS; RIB WAVEGUIDES; SEMICONDUCTOR QUANTUM DOTS; ***SILICON*** ; ***SILICON*** -ON-INSULATOR; THERMO-OPTICAL EFFECTS

ST ***SOI*** ; optical CDMA; ***arrayed waveguide grating*** *** demultiplexers*** ; optical sources; integrated optical detectors; optical waveguides; CMOS integrated circuit; tunneling-induced electroluminescence; MOS structures; quantum dot stacks; light-emitting diodes; infrared spectrometers; near-IR wavemeter; photodetectors; avalanche multiplication; ***submicron Si p-i-n diodes*** ; ***porous*** *** silicon*** ; integrated waveguides; rib waveguides; thermo-optic effect; light switching; optoelectronic integrated circuits; ***micromachined*** *** silicon actuators*** ; driving voltage; tunable filters; mechanical properties; PECVD; pyrolytic properties; polysilane photoresists; ultrathin films

ET Si; As*In; As sy 2; sy 2; In sy 2; InAs; In cp; cp; As cp; Ge; As*Ga*In; As sy 3; sy 3; Ga sy 3; In sy 3; InGaAs; Ga cp

L7 ANSWER 127 OF 187 INSPEC (C) 2006 IEE on STN

AN 2000:6711293 INSPEC DN A2000-21-6842-001

TI Formation of periodic diffraction structures at semiconductor surfaces for studying the dynamics of photoinduced phase transitions.

AU Fattakhov, Ya.V.; Galyautdinov, M.F.; L'vova, T.N.; Khaibullin, B. (Physicotech. Inst., Acad. of Sci., Kazan, Russia)

SO Optics and Spectroscopy (July 2000) vol.89, no.1, p.136-42. 12 refs.
Published by: MAIK Nauka/Interperiodica Publishing
Price: CCCC 0030-400X/2000/8901-0136$20.00
CODEN: OPSUA3 ISSN: 0030-400X
SICI (Trl): 0030-400X(200007)89:1L.136:FPDS;1-J
Translation of: Optika i Spektroskopiya (July 2000) vol.89, no.1, p.150-6. 12 refs.
CODEN: OSFMA3 ISSN: 0030-4034
SICI: 0030-4034(200007)89:1L.150;1-B

DT Journal; Translation Abstracted

TC Experimental

CY Russian Federation; Russian Federation

LA English

AB New methods for the formation of measuring periodic diffraction structures at ***silicon*** surfaces are proposed and tested. The one-dimensional ***grating*** is formed at a surface of implanted ***silicon*** by nanosecond laser annealing in the regime of interference of two crossed beams. The two-dimensional ***grating*** is formed at the surface of single-crystal ***silicon*** by implantation through a special periodic mask. Diffraction ***gratings*** formed are amplitude ***gratings*** because their periodically alternating fragments differ only in the reflection coefficient. The amplitude ***gratings*** were transformed into phase ***gratings*** by irradiation by pulses of incoherent light in the regime of local melting. A noticeable increase in the diffraction efficiency is found in this case, which allows these ***gratings*** to be used to study the dynamics of various phase transitions induced by high-power incoherent light pulses in implanted ***silicon*** .

CC A6842 Surface phase transitions and critical phenomena; A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A6180B Ultraviolet, visible and infrared radiation effects; A6470D Solid-liquid transitions; A7920D Laser-surface impact phenomena

CT DIFFRACTION ***GRATINGS*** ; ***ION*** ***IMPLANTATION*** ; LASER BEAM ANNEALING; MELTING; ***SILICON*** ; SURFACE PHASE TRANSFORMATIONS

ST periodic diffraction structure formation; semiconductor surfaces; photoinduced phase transition dynamics; ***Si surfaces*** ; ***1D*** *** grating*** ; ***implanted Si*** ; nanosecond laser annealing; crossed beam interference; ***2D grating*** ; ***single-crystal Si*** ; periodic mask; implantation; ***diffraction gratings*** ; ***amplitude gratings*** ; periodically alternating fragments; reflection coefficient; ***phase gratings*** ; incoherent light pulse irradiation; local melting; diffraction efficiency; high-power incoherent light pulses; ***Si***
CHI Si sur, Si el
ET Si; D

L7 ANSWER 128 OF 187 INSPEC (C) 2006 IEE on STN
AN 2000:6632772 INSPEC DN A2000-15-6855-090; B2000-08-0520F-054
TI Erbium incorporation in plasma-deposited amorphous ***silicon*** .
AU Terukov, E.I.; Konkov, O.I.; Kudoyarova, V.Kh. (A.F. Ioffe Physicotech. Inst., Acad. of Sci., St. Petersburg, Russia); Koughia, K.V.; Weiser, G.; Kuhne, H.; Kleider, J.P.; Longeaud, C.; Bruggemann, R.
SO Journal of Non-Crystalline Solids (May 2000) vol.266-269, p.614-18. 13 refs.
Doc. No.: S0022-3093(99)00949-7
Published by: Elsevier
Price: CCCC 0022-3093/2000/$20.00
CODEN: JNCSBJ ISSN: 0022-3093
SICI: 0022-3093(200005)266/269L.614:EIPD;1-D
Conference: Amorphous and Microcrystalline Semiconductors - Science and Technology. Eighteenth International Conference. Snowbird, UT, USA, 23-27 Aug 1999
Sponsor(s): Energy Conversion Devices; Japan Steelworks; MVSyst.; Nat. Renewable Energy Lab.; et al
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB Erbium doped amorphous ***silicon*** has been prepared by the evaporation of Er containing metallo-organics inside the plasma of a plasma enhanced chemical vapor deposition (PECVD) system. The samples combine photoluminescence efficiency and photosensitivity at room temperature. The spatial distribution of Er was found to be inhomogeneous due to insufficient control of the Er source. Electron and hole transport properties as well as defect properties were measured by means of steady-state photocurrent, constant photocurrent method (CPM), modulated photocurrent (MPC) and steady-state photocarrier ***grating*** (SSPG) experiments, which are interpreted on the basis of the inhomogeneous distribution of Er over the film thickness.
CC A6855 Thin film growth, structure, and epitaxy; A7155J Localization in disordered structures; A7155E Impurity and defect levels in elemental semiconductors; A7280C Electrical conductivity of elemental semiconductors; A7360J Electrical properties of elemental semiconductors (thin films/low-dimensional structures); A7855C Photoluminescence in elemental semiconductors; A7865H Optical properties of elemental semiconductors (thin films/low-dimensional structures); A7280N Electrical conductivity of amorphous and glassy semiconductors; A7360N Electrical properties of amorphous and glassy semiconductors (thin films/low-dimensional structures); A7865M Optical properties of amorphous and glassy semiconductors and insulators (thin films/low-dimensional structures); A5275R Plasma applications in manufacturing and materials processing; A8115H Chemical vapour deposition; A6170W Impurity concentration, distribution, and gradients; A7240 Photoconduction and photovoltaic effects; photodielectric effects; A6180J Ion beam effects; A6170T Doping and implantation of impurities; A7220F Low-field transport and mobility; piezoresistance (semiconductors/insulators); B0520F Chemical vapour deposition; B2520C Elemental semiconductors; B2520F Amorphous and glassy semiconductors; B4210 Photoconducting materials and properties; B2550B Semiconductor doping
CT AMORPHOUS SEMICONDUCTORS; CARRIER MOBILITY; DEFECT STATES; ELEMENTAL SEMICONDUCTORS; ERBIUM; HOLE MOBILITY; HYDROGEN; IMPURITY DISTRIBUTION; IMPURITY STATES; ***ION*** ***IMPLANTATION*** ; PHOTOCONDUCTIVITY; PLASMA CVD; SEMICONDUCTOR GROWTH; ***SILICON***
ST Er incorporation; ***amorphous Si*** ; plasma enhanced chemical vapor deposition; PECVD; photoluminescence efficiency; photosensitivity; room temperature; spatial distribution; electron transport; hole transport;

defect properties; steady-state photocurrent; constant photocurrent
method; modulated photocurrent; ***steady-state photocarrier grating***
; inhomogeneous distribution; ***a-Si:H,Er*** ; 293 K; ***Si:H,Er***
CHI Si:H,Er ss, Er ss, Si ss, H ss, Er el, Si el, H el, Er dop, H dop
PHP temperature 2.93E+02 K
ET Er; Si; H*Si; Si:H; H doping; doped materials

L7 ANSWER 129 OF 187 INSPEC (C) 2006 IEE on STN
AN 2000:6609018 INSPEC DN A2000-13-4280K-009; B2000-07-4150-018
TI New optical modulator at 1.3 mu m integrated on ***silicon***
-on-insulator (SIMOX) standard substrate.
AU Pascal, D.; Landru, N.; Laval, S.; Koster, A. (Inst. d'Electron.
Fondamentale, Univ. de Paris-Sud, Orsay, France)
SO 25th European Conference on Optical Communication. ECOC '99 Conference
Paris, France: Soc. Electr. Electron, 1999. p.242-3 vol.1 of 2
vol.(xxxiii+463+322+65 suppl) pp. 5 refs. Also available on CD-ROM in PDF
format
Conference: Nice, France, 26-30 Sept 1999
Sponsor(s): Minstr. Educ. Nat.; Minstr. Econ. Finances et de Ind
ISBN: 2-912328-12-8
DT Conference Article
TC Practical; Experimental
CY France
LA English
AB A new type of integrated optical modulator based on a ring resonator on
SOI substrate is presented. The main features of the observed
intensity modulation obtained by carrier injection in ***silicon***
are reported. We report a new type of all- ***silicon*** optical
modulator based on carrier injection in a ring resonator. The geometry
allows a small area of the active component. Light injection is realized
through ***grating*** ***couplers*** compatible with optical
fiber. Matrices of such modulators have been realized and could be used as
a spatial light modulator connecting a fiber bundle to another one.
CC A4280K Optical beam modulators; A4282 Integrated optics; A6170T Doping and
implantation of impurities; B4150 Electro-optical devices; B4140
Integrated optics; B2550B Semiconductor doping
CT ELECTRO-OPTICAL MODULATION; INTEGRATED OPTICS; INTENSITY MODULATION;
ION ***IMPLANTATION*** ; OPTICAL RESONATORS; ***SILICON*** ;
SIMOX; SPATIAL LIGHT MODULATORS; SUBSTRATES
ST optical modulator; 1.3 mu m; ***Si-on-insulator standard substrate*** ;
SIMOX standard substrate; integrated optical modulator; ring resonator;
SOI substrate ; intensity modulation; carrier injection;
all-silicon optical modulator ; ring resonator geometry; active
component; light injection; spatial light modulator; fiber bundle; 1.3
mum; ***Si***
CHI Si int, Si el
PHP wavelength 1.3E-06 m
ET Si

L7 ANSWER 130 OF 187 INSPEC (C) 2006 IEE on STN
AN 1999:6318907 INSPEC DN A1999-18-6842-004
TI The dynamics of anisotropic local melting of semiconductors at irradiation
by powerful light pulses.
AU Fattakhov, Ya.V.; Galyautdinov, M.F.; L'vova, T.N.; Khaibullin, I.B.
(Physicotech. Inst., Acad. of Sci., Kazan, Russia)
SO Proceedings of the International Conference on LASERS'97
Editor(s): Carroll, J.J.; Goldman, T.A.
Mclean, VA, USA: Soc. Opt. & Quantum Electron, 1998. p.440-5 of xv+1008
pp. 4 refs.
Conference: New Orleans, LA, USA, 15-19 Dec 1997
DT Conference Article
TC Experimental
CY United States
LA English
AB The dynamics of anisotropic local melting of monocrystalline and implanted
silicon at different regimes of light pulse irradiation was
investigated using several optical methods. In particular, the special
diffraction ***gratings*** were formed on the ***silicon***
surface using ***ion*** ***implantation*** and the effect of local
melting. The diffraction picture was observed at illumination of such
grating by continual irradiation of a He-Ne laser. The intensity
of the diffraction picture depends on the contrast of this periodical

structure, i.e. from difference of crystalline and phase conditions of the substance of ***gratings*** fragments. The dynamics of the diffraction effectivity during and after the power light pulse was registered using a high-speed camera or a photomultiplier. It is possible to note three qualitative stages. In the first stage the decrease of diffraction effectivity and its full disappearance takes place as heating of the sample with the diffraction ***grating*** . This means that the recrystallization of the amorphous layer is finished. In the second stage the diffraction picture arises again when the temperature of the sample with the ***grating*** reaches the temperature of local melting. In this case the local melting begins on "amorphyzed" cells of the diffraction ***grating*** . In the third stage the small decrease of diffraction effectivity was observed after switching off the light pulse, cooling of the sample and recrystallization of local molten regions. Thus it is possible to determine from this experiment the parameters which are necessary to develop the physical model of the effect and to understand the features of phase transitions during light irradiation.

CC A6842 Surface phase transitions and critical phenomena; A6470D Solid-liquid transitions; A4280F Gratings, echelles; A4260H Laser beam characteristics and interactions; A7920D Laser-surface impact phenomena; A6180B Ultraviolet, visible and infrared radiation effects; A6170T Doping and implantation of impurities

CT DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; HEATING; ***ION*** ***IMPLANTATION*** ; LASER BEAM EFFECTS; MELTING; RECRYSTALLISATION; SEMICONDUCTOR DOPING; ***SILICON*** ; SURFACE PHASE TRANSFORMATIONS

ST anisotropic local melting; semiconductors; powerful light pulses; dynamics; ***monocrystalline Si*** ; ***implanted Si*** ; light pulse irradiation; optical methods; ***diffraction gratings*** ; ***Si surface*** ; ***ion implantation*** ; local melting; diffraction picture; illumination; continual irradiation; He-Ne laser; periodical structure; phase conditions; crystalline conditions; ***gratings*** *** fragments*** ; diffraction effectivity; power light pulse; qualitative stages; heating; recrystallization; amorphous layer; amorphyzed cells; implanted cell; microrelief; light irradiation; phase transitions; physical model; local molten regions; light pulse; ***Si*** ; He-Ne

CHI Si sur, Si el; HeNe bin, He bin, Ne bin

ET He*Ne; He-Ne; Si; HeNe; He cp; cp; Ne cp; He; Ne

L7 ANSWER 131 OF 187 INSPEC (C) 2006 IEE on STN

AN 1999:6201002 INSPEC DN A1999-09-7865K-015

TI Coherent THz emission from optically excited intrasubband plasmons in single quantum wells.

AU Vosseburger, M.; Hering Bolivar, P.; Sekine, N.; Yamanaka, K.; Hirakawa, K.; Kurz, H. (Inst. fur Halbleitertech. II, Tech. Hochschule Aachen, Germany)

SO Technical Digest. Summaries of Papers Presented at the International Quantum Electronics Conference. Conference Edition. 1998 Technical Digest Series, Vol.7 (IEEE Cat. No.98CH36236)
Washington, DC, USA: Opt. Soc. America, 1998. p.150-1 of 256 pp. 1 refs.
Conference: San Francisco, CA, USA, 3-8 May 1998
Sponsor(s): APS/Div. Lasers Sci.; IEEE/Lasers & Electro-Opt. Soc.; OSA-Opt. Soc. America; US Joint Council on Quantum Electron.; Int. Council on Quantum Electron.; Int. Commission for Opt.; IUPAP
Price: CCCC 1 55752 521 8/98/$15.00
ISBN: 1-55752-541-2

DT Conference Article

TC Experimental

CY United States

LA English

AB We present the first measurements of optically excited intrasubband plasmons in modulation-doped GaAs single quantum wells. The sample is excited under an incident angle of 45 degrees with 100-fs pulses from a Ti:sapphire laser operating at a photon energy of 1.596 eV. Radiative plasmon modes emit THz pulses via a 3- mu m ***grating*** ***coupler*** on top of the sample. The emitted THz radiation is collected by two paraboloidal mirrors and detected with an ***ion*** ***implanted*** ***silicon*** -on-sapphire antenna, which is gated with a time-delayed second part of the laser beam.

CC A7865K Optical properties of III-V and II-VI semiconductors (thin films/low-dimensional structures); A7320D Electron states in low-dimensional structures; A6170T Doping and implantation of impurities;

A7145G Exchange, correlation, dielectric and magnetic functions, plasmons
CT CARRIER DENSITY; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; PLASMONS; SEMICONDUCTOR DOPING; SEMICONDUCTOR QUANTUM WELLS; SUBMILLIMETRE WAVE SPECTRA
ST coherent THz emission; optically excited intrasubband plasmons; single quantum wells; modulation-doped GaAs single quantum wells; incident angle; Ti:sapphire laser; photon energy; radiative plasmon modes; THz pulses; ***grating coupler*** ; emitted THz radiation; paraboloidal mirrors; ***silicon-on-sapphire antenna*** ; 100 fs; 1.596 eV; GaAs
CHI GaAs int, As int, Ga int, GaAs bin, As bin, Ga bin; Al2O3 ss, Al2 ss, Al ss, O3 ss, Ti ss, O ss, Ti el, Ti dop
PHP time 1.0E-13 s; electron volt energy 1.596E+00 eV
ET As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; Ti; V; As; Ga; Al*O; Al2O; Al cp; O cp; Al; O

L7 ANSWER 132 OF 187 INSPEC (C) 2006 IEE on STN
AN 1998:6095262 INSPEC DN A9901-6180B-006; B9901-2550A-007
TI The dynamics of recrystallization and melting of implanted ***silicon*** at irradiation by powerful light pulses.
AU Fattakhov, Y.V.; Galyautdinov, M.F.; L'vova, T.N.; Khaibullin, I.B. (Phys.-Tech. Inst., Acad. of Sci., Kazan, Russia)
SO Vacuum (Oct. 1998) vol.51, no.2, p.255-9. 10 refs.
Doc. No.: S0042-207X(98)00170-5
Published by: Elsevier
Price: CCCC 0042-207X/98/$19.00+.00
CODEN: VACUAV ISSN: 0042-207X
SICI: 0042-207X(199810)51:2L.255:DRMI;1-X
Conference: Vacuum, Electron and Ion Technolgies. 10th International Summer School VEIT'97. Varna, Bulgaria, 22-26 Sept 1997
DT Conference Article; Journal
TC Experimental
CY United Kingdom
LA English
AB One of the effects observed in the irradiation of semiconductors by powerful pulses of coherent and incoherent light sources in the range of durations from 0.2 ms to 10 s is the effect of anisotropic local melting. If allows valuable physical information on semiconductor properties and processes occurring in the sample during and after pulse irradiation to be obtained. Here the dynamics of anisotropic local melting of implanted ***silicon*** for different regimes of light pulses is investigated. The nucleation and growth of local regions of melting (LRM) during the light irradiation was detected by a high-speed camera. The time dependencies of the quantity and sizes of LRMs were dynamically observed for the first time. Diffraction ***gratings*** were formed using ***ion*** ***implantation*** and the effect of local melting. The dynamics of diffraction during and after the light pulse irradiation were studied. The results allow the specification of the mechanism of the effect of anisotropic local melting, and the optimization of the regimes of pulse annealing of implanted semiconductors and the regimes of formation of submicron dopant layers by rapid thermal diffusion from spin-on sources.
CC A6180B Ultraviolet, visible and infrared radiation effects; A6170T Doping and implantation of impurities; A6170A Annealing processes; A6470D Solid-liquid transitions; B2550A Annealing processes in semiconductor technology; B2550B Semiconductor doping; B2520C Elemental semiconductors
CT DIFFRACTION ***GRATINGS*** ; DIFFUSION; ELEMENTAL SEMICONDUCTORS; INCOHERENT LIGHT ANNEALING; ***ION*** ***IMPLANTATION*** ; MELTING; NUCLEATION; RECRYSTALLISATION; SEMICONDUCTOR DOPING; ***SILICON***
ST recrystallization; ***implanted silicon*** ; powerful light pulses; incoherent light sources; coherent light sources; anisotropic local melting; semiconductor properties; pulse irradiation; dynamics; nucleation; growth; light irradiation; time dependence; ***diffraction*** *** gratings*** ; ***ion implantation*** ; optimization; pulse annealing; submicron dopant layers; rapid thermal diffusion; spin-on sources; ***Si***
CHI Si el
ET Si

L7 ANSWER 133 OF 187 INSPEC (C) 2006 IEE on STN
AN 1998:6076751 INSPEC DN A9824-8160C-018; B9812-2550E-110
TI Direct micropatterning of ***Si*** and GaAs using electrochemical development of focused ***ion*** beam ***implants*** .
AU Schmuki, P. (Dept. of Mater. Sci., Fed. Inst. of Technol., Lausanne,

Switzerland); Erickson, L.E.
SO Applied Physics Letters (2 Nov. 1998) vol.73, no.18, p.2600-2. 15 refs.
Doc. No.: S0003-6951(98)00244-7
Published by: AIP
Price: CCCC 0003-6951/98/73(18)/2600(3)/$15.00
CODEN: APPLAB ISSN: 0003-6951
SICI: 0003-6951(19981102)73:18L.2600:DMGU;1-Z
DT Journal
TC Practical; Experimental
CY United States
LA English
AB Focused ***ion*** beam ***implantation*** of ***Si*** ++ was used to write defined surface damage/implant patterns into n-type GaAs (100) and ***Si*** (100) substrates. These implant sites represent initiation sites for dissolution processes when electrochemically polarized in HCl or HF electrolytes, respectively. Selective dissolution within the patterns is achieved if anodic polarization of the n-type material is carried out in the dark at potentials below (cathodic to) the onset of dissolution potential of the unimplanted surface. Uniform etching within the implanted region takes place, when local electropolishing conditions are established. Thus, highly defined etch patterns, e.g., lines, ***gratings*** , or pits, can be produced in the submicron range. The depth of the etched patterns corresponds to the implant/damage profile created in the implantation process and etch stop occurs at less reactive crystal planes.
CC A8160C Surface treatment and degradation of semiconductors; A6170T Doping and implantation of impurities; B2550E Surface treatment for semiconductor devices; B2550B Semiconductor doping; B2520D II-VI and III-V semiconductors; B2520C Elemental semiconductors
CT DISSOLVING; ELECTROLYTIC POLISHING; ELEMENTAL SEMICONDUCTORS; ETCHING; FOCUSED ION BEAM TECHNOLOGY; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; ***SILICON*** ; SUBSTRATES
ST direct micropatterning; electrochemical development; ***focused ion beam*** *** implants*** ; defined surface damage; implant patterns; n-type GaAs (100) substrate; ***Si (100) substrate*** ; initiation sites; dissolution processes; electrochemical polarization; HCl electrolyte; HF electrolyte; selective dissolution; anodic polarization; dissolution potential; uniform etching; local electropolishing conditions; lines; ***gratings*** ; pits; submicron range; etched pattern depth; etch stop; ***Si*** ; GaAs
CHI Si sur, Si el; GaAs sur, As sur, Ga sur, GaAs bin, As bin, Ga bin
ET Si; As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; Si++; Si ip 1; ip 1; Cl*H; HCl; H cp; Cl cp; F*H; HF; F cp; V; As; Ga

L7 ANSWER 134 OF 187 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 1998:6046247 INSPEC DN B9811-4260D-031
TI Development and characterization of electronic devices based on single crystalline CoSi2/ ***Si*** (100)-heterostructures and sub-micron patterning of CoSi2-layers on ***silicon*** .
AU Dolle, M.
CS Forschungszentrum Julich, Germany
NR JUL-3446
SO Oct. 1997. 119 pp. 121 refs. Availability: TIB Hannover,D-30167 Hannover, Germany
DT Report
TC Experimental
CY Germany, Federal Republic of
LA German
AB The fabrication process of a light emitting diode (LED)-array with porous ***silicon*** (PS) was investigated. The fundamental idea was to control the electroluminescence (EL) of a continuous PS-layer locally by an array of vertical metal-semiconductor-field-effect-transistors (MESFETs) based on single crystalline ***Si*** /CoSi2/ ***Si*** (100)-heterostructures. The LED-array consists of two crossed stripe- ***gratings*** buried in a ***silicon*** substrate with a continuous PS-layer on top. One ***grating*** acts as source-, the other one as gate- and the PS-layer as drain-electrode of the transistor. Secondary ion mass spectroscopy and channeling measurements have shown that highly conducting source- ***gratings*** in intrinsic ***silicon*** substrate can be fabricated by implantation of phosphorous through a SiO2-mask. The gate- ***grating*** was fabricated by ***implantation*** of cobalt ***ions*** through a mask perpendicular to the source-stripe- ***grating*** and subsequent annealing (ion beam

synthesis, IBS). The current-voltage characteristic of the source and gate-electrode have proven the compatibility of phosphorous-implantation and IBS of CoSi2. The compatibility of IBS with the electrolytic formation of porous ***silicon*** was demonstrated by the observed EL of porous ***silicon*** on buried CoSi2-layers. In addition, a novel patterning method for single crystalline CoSi2-layers on ***silicon*** based on local oxidation of the silicide was developed and optimized. The local oxidation of thin CoSi2-layers was investigated in detail. A strong dependence of the patterning process on the silicide layer thickness as well as on the orientation of the oxidation mask was observed. The new process allows the patterning of 100 nm wide gaps between two metallic contacts by use of standard optical lithography.

CC B4260D Light emitting diodes; B0510D Epitaxial growth; B2550B Semiconductor doping; B2550E Surface treatment for semiconductor devices; B2550G Lithography; B2560S Other field effect devices

CT CAPACITANCE; CHANNELLING; COBALT COMPOUNDS; DOPING PROFILES; ELECTROLUMINESCENCE; ELEMENTAL SEMICONDUCTORS; INTERFACE STRUCTURE; ***ION*** ***IMPLANTATION*** ; LIGHT EMITTING DIODES; MOLECULAR BEAM EPITAXIAL GROWTH; OXIDATION; PHOSPHORUS; PHOTOLITHOGRAPHY; PHOTOLUMINESCENCE; POROUS MATERIALS; RECRYSTALLISATION; RUTHERFORD BACKSCATTERING; SCANNING ELECTRON MICROSCOPY; SCHOTTKY GATE FIELD EFFECT TRANSISTORS; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR DOPING; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR HETEROJUNCTIONS; STOICHIOMETRY; TRANSMISSION ELECTRON MICROSCOPY

ST fabrication process; light emitting diode; ***porous silicon*** ; MESFET; metal-semiconductor field effect transistor; heterostructures; ***crossed stripe-gratings*** ; secondary ion mass spectroscopy; channeling measurements; implantation; annealing treatment; ion beam synthesis; current-voltage characteristic; gate-electrode; patterning method; local oxidation; layer thickness; standard optical lithography; RBS; Rutherford backscattering; TEM; transmission electron microscopy; SEM; scanning electron microscopy; ***CoSi2-Si*** ; ***Si:P*** ; SiO2

CHI CoSi2-Si int, CoSi2 int, Si2 int, Co int, Si int, CoSi2 bin, Si2 bin, Co bin, Si bin, Si el; Si:P bin, Si bin, P bin, Si el, P el, P dop; SiO2 int, O2 int, Si int, O int, SiO2 bin, O2 bin, Si bin, O bin

ET Co*Si; Co sy 2; sy 2; Si sy 2; CoSi2; Co cp; cp; Si cp; Si; O*Si; SiO2; O cp; CoSi2-Si; P*Si; Si:P; P doping; doped materials; CoSi; Co; P; SiO; O

L7 ANSWER 135 OF 187 INSPEC (C) 2006 IEE on STN

AN 1997:5732719 INSPEC DN A9723-0785-016

TI Spectral characteristics of multilayer cobalt-carbon mirrors for the lambda approximately=7.5 nm range.

AU Kolachevskii, N.N. (P.N. Lebedev Phys. Inst., Acad. of Sci., Moscow, Russia); Louis, E.; Spiller, E.; Mitropol'skii, M.M.; Bijkerk, F.; Ragozin, E.N.

SO Quantum Electronics (Aug. 1997) vol.27, no.8, p.712-16. 23 refs.
Published by: Turpion Ltd.; Kvantovaya Elektronika
CODEN: QUELEZ ISSN: 1063-7818
SICI (Trl): 1063-7818(199708)27:8L.712:SCMC;1-Z
Translation of: Kvantovaya Elektronika, Moskva (Aug. 1997) vol.24, no.8, p.731-5. 23 refs.
CODEN: KVEKA3 ISSN: 0368-7147
SICI: 0368-7147(199708)24:8L.731;1-7

DT Journal; Translation Abstracted

TC Experimental

CY Russian Federation; United Kingdom

LA English

AB Multilayer cobalt-carbon mirrors on ***Si*** (111) substrates were made by electron-beam deposition and polishing of the metal layers by Kr+ ***ion*** ***bombardment*** . A new spectroscopic method was developed for estimating the parameters of plane multilayer X-ray mirrors by illuminating a sample with broad-band radiation from a laser-plasma source and by subsequent dispersion of this radiation with a diffraction ***grating*** operating in the transmission mode.

CC A0785 X-ray, gamma-ray instruments and techniques; A4280F Gratings, echelles; A4278C Optical lens and mirror design; A4285D Optical fabrication, surface grinding; A8160 Corrosion, oxidation, etching, and other surface treatments; A8115G Vacuum deposition; A6855 Thin film growth, structure, and epitaxy

CT CARBON; COBALT; DIFFRACTION ***GRATINGS*** ; ELECTRON BEAM DEPOSITION; LASER MIRRORS; MIRRORS; OPTICAL FABRICATION; OPTICAL FILMS; POLISHING;

X-RAY APPARATUS; X-RAY OPTICS
ST multilayer mirrors; ***Si (111) substrates*** ; Co-C mirrors; ***Kr+*** *** ion bombardment*** ; polishing; metal layers; electron-beam deposition; spectroscopic method; plane multilayer X-ray mirrors; broad-band radiation; laser-plasma source; dispersion radiation; ***diffraction*** *** grating*** ; transmission mode; spectral characteristics; 7.5 nm; ***Si*** ; Kr; Co-C
CHI Si int, Si el; Kr el; Co-C int, Co int, C int, Co el, C el
PHP wavelength 7.5E-09 m
ET Si; Kr; Kr+; Kr ip 1; ip 1; C*Co; Co-C; Co

L7 ANSWER 136 OF 187 INSPEC (C) 2006 IEE on STN
AN 1997:5673864 INSPEC DN A9719-4282-010; B9710-6260-056; C9710-7410F-043
TI Design and numerical analysis of a "silica-on- ***silicon*** " integrated optical duplexer.
AU Forastiere, M.A.; Righini, G.C.; Verciani, A. (Ist. di Ricerca sulle Onde Elettromagnetiche, CNR, Firenze, Italy)
SO Proceedings of the SPIE - The International Society for Optical Engineering (1996) vol.2954, p.88-98. 12 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0 8194 2358 0/96/$6.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1996)2954L.88:DNAT;1-T
Conference: Fiber Integrated Optics. Berlin, Germany, 10-11 Oct 1996
Sponsor(s): SPIE; Technol. Innovationszentrum; Soc. Imaging Sci. & Technol.; et al
DT Conference Article; Journal
TC Practical; Theoretical
CY United States
LA English
AB Silica-on- ***silicon*** is one of the best materials structures currently considered for production of integrated optical devices, in particular for telecommunication and signal processing applications. Deposition of silica films can be advantageously attained by the sol-gel technique, which permits both a great flexibility in the refractive index definition and the possibility of ***doping*** with rare earth ***ions*** . In this work, we designed and modeled an integrated optical duplexer, intended as a component of a fully-integrated erbium-doped optical amplifier, operating in the third telecommunication window. The guiding structures are of the strip-loaded type, to be realized by the sol-gel technique onto a buffered ***silicon*** substrate. Design optimization and modeling was carried out by a software package which was developed on purpose in MATLAB environment, mainly based on the Effective Index Method (EIM). Here we report a general design procedure for the above said component, which takes into account industrial production requirements as well as device's performance.
CC A4282 Integrated optics; A4280L Optical waveguides and couplers; A4280S Optical communications devices; B6260 Optical links and equipment; B4140 Integrated optics; B4130 Optical waveguides; C7410F Communications computing; C7320 Physics and chemistry computing; C5630 Networking equipment
CT INTEGRATED OPTICS; MULTIPLEXING EQUIPMENT; OPTICAL COMMUNICATION EQUIPMENT; OPTICAL DESIGN TECHNIQUES; OPTICAL DIRECTIONAL ***COUPLERS*** ; PHYSICS COMPUTING; ***SILICON*** ; ***SILICON*** COMPOUNDS; SOL-GEL PROCESSING; TELECOMMUNICATION COMPUTING
ST ***silica-on-silicon integrated optical duplexer*** ; optical duplexer design; sol-gel technique; fully-integrated ER-doped optical amplifier; third telecommunication window; strip-loaded type; buffered substrate; design optimization; modeling; software package; effective index method; industrial production requirements; device performance; ***directional*** *** coupler*** ; transfer loss; beam propagation method; ***SiO2-Si***
CHI SiO2-Si int, SiO2 int, O2 int, Si int, O int, SiO2 bin, O2 bin, Si bin, O bin, Si el
ET O*Si; O sy 2; sy 2; Si sy 2; SiO2; Si cp; cp; O cp; SiO2-Si; SiO; Si; O

L7 ANSWER 137 OF 187 INSPEC (C) 2006 IEE on STN
AN 1997:5673840 INSPEC DN A9719-4280L-026; B9710-4130-033
TI Fabrication of periodically inverted domain structures in LiTaO3 using ion inducing method.
AU Wanghe Cao; Li Lina (Inst. of Phys., Acad. Sinica, Changchun, China)
SO Proceedings of the SPIE - The International Society for Optical

Engineering (1996) vol.2897, p.354-6. 4 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0 8194 2298 3/96/$6.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1996)2897L.354:FPID;1-D
Conference: Electro-Optic and Second Harmonic Generation Materials, Devices, and Applications. Beijing, China, 6-7 Nov 1996
Sponsor(s): SPIE; China Opt. & Optoelectron. Manuf. Assoc.; Chinese Opt. Soc

DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB The experiment indicated that ***Si*** ions have an action of suppressing the widthwise diffusion of protons and increasing the depth during the selective proton exchange process of LiTaO3. It is also suggested that ***Si*** ions may induce the domain inversion.
CC A4280L Optical waveguides and couplers; A8230H Chemical exchanges (substitution, atom transfer, abstraction, disproportionation, and group exchange); A4285D Optical fabrication, surface grinding; A6170T Doping and implantation of impurities; A4280F Gratings, echelles; A4265K Optical harmonic generation, frequency conversion, parametric oscillation and amplification; A7780D Ferroelectric domain structure and effects; hysteresis; A4270F Other optical materials; A6630J Diffusion, migration, and displacement of impurities in solids; B4130 Optical waveguides; B4340 Nonlinear optics and devices; B4110 Optical materials
CT DIFFRACTION ***GRATINGS*** ; DIFFUSION; ELECTRIC DOMAINS; HEAT TREATMENT; ION EXCHANGE; ***ION*** ***IMPLANTATION*** ; LITHIUM COMPOUNDS; OPTICAL FABRICATION; OPTICAL HARMONIC GENERATION; OPTICAL MATERIALS; OPTICAL WAVEGUIDES
ST periodically inverted domain structures; LiTaO3; ion inducing method; ***Si ions*** ; widthwise diffusion; selective proton exchange process; domain inversion; fabrication
CHI LiTaO3 ss, TaO3 ss, Li ss, O3 ss, Ta ss, O ss
ET Li*O*Ta; Li sy 3; sy 3; O sy 3; Ta sy 3; LiTaO3; Li cp; cp; Ta cp; O cp; Si; LiTaO; O*Ta; TaO; Li; O; Ta

L7 ANSWER 138 OF 187 INSPEC (C) 2006 IEE on STN
AN 1996:5480274 INSPEC DN A9705-4281-004; B9703-4125-007
TI A Kramers-Kronig analysis of the absorption change in fiber ***gratings*** .
AU Digonnet, M.J.F. (Edward L. Ginzton Lab., Stanford Univ., CA, USA)
SO Proceedings of the SPIE - The International Society for Optical Engineering (1996) vol.2841, p.109-20. 28 refs.
Published by: SPIE-Int. Soc. Opt. Eng
Price: CCCC 0 8194 2229 0/96/$6.00
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(1996)2841L.109:KKAA;1-A
Conference: Doped Fiber Devices. Denver, CO, USA, 8-9 Aug 1996
Sponsor(s): SPIE

DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB We apply a Kramers-Kronig model to several published experimental studies of photosensitivity in Ge-doped silica to calculate the predicted index change Delta nKK from the measured change in the absorption spectrum (induced by UV, flame brushing and ***ion*** ***implantation***). In most cases Delta nKK is close to the measured index change Delta nexp. Most of Delta nKK (50%-95%) arises from absorption changes between 165 and 195 nm. In the few cases where Delta nKK is much smaller than Delta nexp, the absorption spectrum was not measured below 200 nm, which is probably the reason for the discrepancy. Based on several observations, we also make the hypothesis that in the majority of our study population, color centers are probably responsible for most of the observed absorption change, and thus of the index change.
CC A4281D Optical propagation, dispersion and attenuation in fibres; A4280F Gratings, echelles; A6170D Colour centres; A7850E Impurity and defect absorption in insulators; A7820D Optical constants and parameters; A6170T Doping and implantation of impurities; B4125 Fibre optics
CT COLOUR CENTRES; DEFECT ABSORPTION SPECTRA; DIFFRACTION ***GRATINGS*** ; GERMANIUM; ***ION*** ***IMPLANTATION*** ; KRAMERS-KRONIG RELATIONS;

LIGHT ABSORPTION; OPTICAL FIBRES; REFRACTIVE INDEX; ***SILICON*** COMPOUNDS
ST Kramers-Kronig analysis; absorption change; ***fiber gratings*** ; Kramers-Kronig model; photosensitivity; Ge-doped SiO2; predicted index change; absorption spectrum; ***ion implantation*** ; flame brushing; color centers; ultraviolet photons; 165 to 195 nm; SiO2:Ge
CHI SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Ge dop
PHP wavelength 1.65E-07 to 1.95E-07 m
ET Ge; O*Si; SiO2; Si cp; cp; O cp; Ge*O*Si; Ge sy 3; sy 3; O sy 3; Si sy 3; SiO2:Ge; Ge doping; doped materials; SiO; O; Si

L7 ANSWER 139 OF 187 INSPEC (C) 2006 IEE on STN
AN 1996:5433568 INSPEC DN A9701-4280F-005
TI Atomic force microscopy of laser induced sub-micrometer periodic structures on implanted fused silica and ***silicon*** .
AU Bukharaev, A.A.; Janduganov, V.M.; Samarsky, E.A.; Berdunov, N.V. (Physicotech. Inst., Acad. of Sci., Kazan, Russia)
SO Applied Surface Science (Sept. 1996) vol.103, no.1, p.49-54. 10 refs.
Published by: Elsevier
Price: CCCC 0169-4332/96/$15.00
CODEN: ASUSEE ISSN: 0169-4332
SICI: 0169-4332(199609)103:1L.49:AFML;1-5
DT Journal
TC Experimental
CY Netherlands
LA English
AB The ultrathin layers with depth from 30 to 60 nm and optical absorption coefficient up to 105 cm-1 were created on the fused silica and crystalline ***silicon*** surfaces by Fe and Sb ***ions*** ***bombardment*** respectively. Nanometer-scale alpha -Fe particles formed into glass surface layer by high dose Fe+ bombardment were responsible for optical absorption in the Fe+ implanted fused silica. The increase in the optical absorption of ***Si*** after Sb+ implantation are due to transformation of the ***silicon*** surface layer from the crystalline to the amorphous state. These layers were found to be easily evaporated by pulsed beam of UV and visible lasers due to their high light absorption. Such materials may be promising in manufacturing the video disk master. The sub-micrometer diffraction ***gratings*** were produced using holographic method in order to estimate the possible resolution of these media for optical data storage. It was found with Atomic Force Microscope (AFM) that microtopography of laser-induced diffraction ***gratings*** is determined by the size of optical absorption centers. After treatment with higher laser power density the half-micrometer bi-directional diffraction ***gratings*** on implanted ***silicon*** were observed by AFM. The origin of these ***gratings*** was explained in terms of the laser-induced surface electromagnetic waves.
CC A4280F Gratings, echelles; A6180J Ion beam effects; A6170T Doping and implantation of impurities; A6820 Solid surface structure; A7820D Optical constants and parameters; A4240E Holographic optical elements; holographic gratings
CT ABSORPTION COEFFICIENTS; ATOMIC FORCE MICROSCOPY; ELEMENTAL SEMICONDUCTORS; HOLOGRAPHIC ***GRATINGS*** ; ***ION*** ***IMPLANTATION*** ; LASER BEAM EFFECTS; ***SILICON*** ; ***SILICON*** COMPOUNDS
ST fused silica; ***crystalline silicon surfaces*** ; laser induced sub-mu m periodic structures; atomic force microscopy; ultrathin layers; optical absorption coefficient; ***ion bombardment*** ; glass surface layer; amorphisation; visible lasers; UV lasers; ***diffraction*** *** gratings*** ; optical data storage; microtopography; ***Si*** ; SiO2
CHI Si sur, Si el; SiO2 sur, O2 sur, Si sur, O sur, SiO2 bin, O2 bin, Si bin, O bin
ET Fe; Sb; Fe+; Fe ip 1; ip 1; Si; Sb+; Sb ip 1; O*Si; SiO2; Si cp; cp; O cp; SiO; O

L7 ANSWER 140 OF 187 INSPEC (C) 2006 FIZ KARLSRUHE on STN
AN 1996:5420976 INSPEC DN A9624-4280S-017; B9612-6260-116
TI From processing of cosmic ices to optical communications.
AU Brown, W.L. (AT&T Bell Labs., Murray Hill, NJ, USA)
SO Nuclear Instruments & Methods in Physics Research, Section B (Beam Interactions with Materials and Atoms) (Aug. 1996) vol.116, no.1-4, p.1-12. 17 refs.

Doc. No.: S0168-583X(96)00119-X
Published by: Elsevier
Price: CCCC 0168-583X/96/$15.00
CODEN: NIMBEU ISSN: 0168-583X
SICI: 0168-583X(199608)116:1/4L.1:FPCI;1-B
Conference: 8th Conference on Radiation Effects in Insulators. Catania, Italy, 11-15 Sept 1995
Sponsor(s): Univ. Catania; Consorzio Catania Ric.; Consiglio Nat. Ric.; et al

DT Conference Article; Journal
TC Experimental; General Review
CY Netherlands
LA English
AB In the low temperatures of space, frozen layers of water, ammonia and methane are subject to chemical and physical alteration by ***bombardment*** with energetic ***ions*** , electrons and photons. In the lithographic definition of submicron ***silicon*** integrated circuits, the optical elements of the lithographic system are damaged by light at high intensities. In glass fiber communication systems optical ***grating*** for wavelength selectivity can be formed by UV irradiation. This small subset of radiation effects in insulators is discussed as illustrative of the range of influence of this field in current science and technology.
CC A4280S Optical communications devices; A9650D Interplanetary dust; A4281B Optical fibre fabrication, cladding, splicing, joining; B6260 Optical links and equipment; B2550G Lithography; B2570 Semiconductor integrated circuits; B4125 Fibre optics
CT COSMIC DUST; COSMIC RAY INTERACTIONS; ELECTRON BEAM EFFECTS; ENERGY LOSS OF PARTICLES; INSULATING MATERIALS; INTEGRATED CIRCUIT TECHNOLOGY; INTERPLANETARY MATTER; ION BEAM EFFECTS; OPTICAL FIBRE COMMUNICATION; OPTICAL FIBRE FABRICATION; ORGANIC COMPOUNDS; PHOTOLITHOGRAPHY; PHOTON STIMULATED DESORPTION; RAMAN SPECTRA
ST cosmic ices; optical communication; ammonia; methane; energetic ion irradiation; electron irradiation; photon irradiation; optical elements; lithographic system; glass fiber communication systems; ***optical*** *** grating*** ; wavelength selectivity; radiation effects; illustrative examples
ET In

L7 ANSWER 141 OF 187 INSPEC (C) 2006 IEE on STN
AN 1996:5360697 INSPEC DN A9619-8115H-036; B9610-0520F-045
TI Improved a-Si1-xGex:H of large x deposited by PECVD.
AU Wickboldt, P.; Dawen Pang; Paul, W. (Div. of Appl. Sci., Harvard Univ., Cambridge, MA, USA); Chen, J.H.; Fan Zhong; Cohen, J.D.; Yan Chen; Williamson, D.L.
SO Journal of Non-Crystalline Solids (May 1996) vol.198-200, pt.1, p.567-71. 16 refs.
Published by: Elsevier
Price: CCCC 0022-3093/96/$15.00
CODEN: JNCSBJ ISSN: 0022-3093
SICI: 0022-3093(199605)198/200:1L.567:IXLD;1-4
Conference: 16th International Conference on Amorphous Semiconductors - Science and Technology. Kobe, Japan, 4-8 Sept 1995
Sponsor(s): IUPAP; Japan Soc. Appl. Phys.; Kobe City; et al
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB By plasma enhanced chemical vapor deposition a-Si1-xGex:H thin films of large x have been prepared which possess optical, electrical and structural properties that are greatly improved over any yet reported. This work extends our previous work on improving the properties of a-Ge:H [W.A. Turner et al., J. Appl. Phys. 67 (1990) 7430]. Steady-state photoconductivity measurements yield a eta mu tau of (1 to 3)*10-7 cm2 V-1 for 1.00>or=x>or=0.75 and (6 to 1D)X 10-8 cm2 V-1 for 0.75>or=x>or=0.50. Photocarrier ***grating*** measurements yield an ambipolar diffusion length much greater than previously obtained for alloys of large x. The electronic state defect density, as determined by drive level capacitance measurements, decreases from 5.3*1016 cm-3 for x=1.00 to 6.5*1015 cm-3 for x=0.57. The Urbach parameter, E0, was found to be 41+or-2 meV for a-Ge:H and 45+or-2 meV for the alloys. Small angle X-ray scattering measurements reveal a structure that is nearly as homogeneous as device quality a-

Si :H. Much of the improvement in electronic and optical properties is associated with the reduction of heterogeneities in the structure. The elimination of columnar structure is attributed to increased ***ion*** ***bombardment*** during growth and conditions which yield a high electron temperature in the discharge plasma, resulting in favorable discharge chemistry.

CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7360F Electronic properties of semiconductor thin films; A7280N Conductivity of amorphous and glassy semiconductors; A7240 Photoconduction and photovoltaic effects; photodielectric effects; A7220J Charge carriers: generation, recombination, lifetime, and trapping (semiconductors/insulators); A7155J Localization in disordered structures; B0520F Vapour deposition; B2520F Amorphous and glassy semiconductors; B4210 Photoconducting materials and properties

CT AMORPHOUS SEMICONDUCTORS; CAPACITANCE; CARRIER LIFETIME; DEFECT STATES; GE- ***SI*** ALLOYS; HYDROGEN; PHOTOCONDUCTIVITY; PLASMA CVD; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; X-RAY SCATTERING

ST a-Si1-xGex:H; plasma enhanced chemical vapor deposition; photoconductivity; ***photocarrier grating measurements*** ; ambipolar diffusion length; electronic state defect density; drive level capacitance measurements; Urbach parameter; X-ray scattering; heterogeneity reduction; columnar structure; high electron temperature; discharge plasma; discharge chemistry; SiGe:H

CHI SiGe:H ss, Ge ss, Si ss, H ss, SiGe bin, Ge bin, Si bin, H el, H dop

ET Ge*H*Si; Ge sy 3; sy 3; H sy 3; Si sy 3; Si1-xGex:H; H doping; doped materials; Si cp; cp; Ge cp; Ge*H; Ge:H; J; D; H*Si; Si:H; Ge*Si; Ge sy 2; sy 2; Si sy 2; Ge-Si; SiGe:H; Ge; Si; SiGe

L7 ANSWER 142 OF 187 INSPEC (C) 2006 IEE on STN

AN 1996:5349290 INSPEC DN A9619-7920F-001; B9610-2520C-002

TI Imagings of picosecond-photoexcited carriers and enhanced Auger recombination rate by transient reflecting ***grating*** measurements.

AU Tanaka, T.; Harata, A.; Sawada, T. (Dept. of Appl. Chem., Tokyo Univ., Japan)

SO Japanese Journal of Applied Physics, Part 1 (Regular Papers, Short Notes & Review Papers) (June 1996) vol.35, no.6A, p.3642-7. 20 refs.
Published by: Publication Office, Japanese Journal Appl. Phys
ISSN: 0021-4922
SICI: 0021-4922(199606)35:6AL.3642:IPPC;1-C

DT Journal

TC Experimental

CY Japan

LA English

AB Photoinduced dynamic processes at a ***silicon*** surface were investigated by time-resolved measurements of a transient reflecting ***grating*** with 532 nm excitation and detection. The signal caused by photoexcited carriers was separated from signals due to thermal and acoustic effects. The carrier signal was found to be more sensitive to ion induced damage than the thermal and acoustic effect signal. Use of the carrier signal provided an in-plane distribution image of near surface damage induced by helium ***ion*** ***implantation*** (energy, 200 keV; dose, 1015 atoms/cm2). The cause of the contrast formation was found to be the change of Auger recombination rate gamma 3. The obtained gamma 3 for intrinsic ***silicon*** was 4.0*10-29 cm6/s which was two orders of magnitude larger than the bulk value. The results indicated defects near the surface region (100 nm) accelerated gamma 3.

CC A7920F Electron-surface impact: Auger emission; A7280C Conductivity of elemental semiconductors; A7920N Atom-, molecule-, and ion-surface impact; A7220J Charge carriers: generation, recombination, lifetime, and trapping (semiconductors/insulators); A6180J Ion beam effects; A7240 Photoconduction and photovoltaic effects; photodielectric effects; A6170T Doping and implantation of impurities; A7847 Ultrafast optical measurements in condensed matter; B2520C Elemental semiconductors

CT AUGER EFFECT; CARRIER LIFETIME; ELEMENTAL SEMICONDUCTORS; ION BEAM EFFECTS; ***ION*** ***IMPLANTATION*** ; ION-SURFACE IMPACT; PHOTOCONDUCTIVITY; ***SILICON*** ; SURFACE RECOMBINATION; SURFACE STATES; TIME RESOLVED SPECTRA

ST picosecond-photoexcited carriers; enhanced Auger recombination rate; ***transient reflecting grating measurements*** ; ***Si surface*** ; semiconductor; time-resolved measurements; ion induced damage; carrier signal; near surface damage; ***Si***

CHI Si sur, Si el

ET Si

L7 ANSWER 143 OF 187 INSPEC (C) 2006 IEE on STN
AN 1996:5190770 INSPEC DN A9606-4285-007
TI Fabrication of a variable diffraction efficiency phase mask by multiple dose ***ion*** ***implantation*** .
AU Erickson, L.E.; Champion, H.G. (Inst. for Microstructural Sci., Nat. Res. Council of Canada, Ottawa, Ont., Canada); Albert, J.; Hill, K.O.; Malo, B.; Theriault, S.; Bilodeau, F.; Johnson, D.C.
SO Journal of Vacuum Science & Technology B (Microelectronics and Nanometer Structures) (Nov.-Dec. 1995) vol.13, no.6, p.2940-3. 11 refs.
Published by: AIP for American Vacuum Soc
Price: CCCC 0734-211X/95/13(6)/2940/4/$6.00
CODEN: JVTBD9 ISSN: 0734-211X
SICI: 0734-211X(199511/12)13:6L.2940:FVDE;1-0
Conference: 29th International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication. Scottsdale, AZ, USA, 30 May-2 June 1995
Sponsor(s): American Vacuum Soc.; IEEE; Opt. Soc. America
DT Conference Article; Journal
TC Experimental
CY United States
LA English
AB Apodized fiber Bragg ***gratings*** show reductions in the unwanted sidebands from those of uniform Bragg ***grating*** . A phase mask whose diffraction efficiency varied from the center to the ends was fabricated by implanting a ***grating*** pattern in a SiO2 substrate with ***Si*** ++ and wet etching in diluted HF. The phase mask diffraction efficiency vs ion dose was measured. Using this phase mask, apodized Bragg ***gratings*** were photoimprinted into fibers. The sidebands of the apodized fiber ***gratings*** were 26 dB below the peak of the central resonance compared to 12 dB for the uniform Bragg ***grating*** . The modeled values were 29 and 13.2 dB, respectively.
CC A4285D Optical fabrication, surface grinding; A4280F Gratings, echelles; A4281B Optical fibre fabrication, cladding, splicing, joining
CT DIFFRACTION ***GRATINGS*** ; ***ION*** ***IMPLANTATION*** ; OPTICAL FIBRE FABRICATION; PHASE SHIFTING MASKS
ST fabrication; phase mask; ***multiple dose ion implantation*** ; ***apodized fiber Bragg grating*** ; sidebands; SiO2 substrate; wet etching; diffraction efficiency; photoimprinting; HF; ***SiO2:Si***
CHI HF bin, F bin, H bin; SiO2:Si sur, SiO2 sur, O2 sur, Si sur, O sur, SiO2:Si bin, SiO2 bin, O2 bin, Si bin, O bin, Si el, Si dop
ET O*Si; SiO2; Si cp; cp; O cp; Si; Si++; Si ip 1; ip 1; F*H; HF; H cp; F cp; B; O sy 2; sy 2; Si sy 2; SiO2:Si; Si doping; doped materials; SiO; O

L7 ANSWER 144 OF 187 INSPEC (C) 2006 IEE on STN
AN 1996:5162608 INSPEC DN A9604-7220J-004; B9602-2520C-063
TI Investigation of recombination parameters in ***ion*** ***implanted*** layer-substrate ***Si*** structures.
AU Gaubas, E.; Jarasiunas, K.; Kaniava, A.; Vaitkus, J. (Inst. of Mater. Sci. & Appl. Res., Vilnius Univ., Lithuania)
SO Defect and Impurity Engineered Semiconductors and Devices. Symposium
Editor(s): Ashok, S.; Chevallier, J.; Akasaki, I.; Johnson, N.M.; Sopori, B.L.
Pittsburgh, PA, USA: Mater. Res. Soc, 1995. p.603-8 of xxi+1054 pp. 4 refs.
Conference: San Francisco, CA, USA, 17-21 April 1995
DT Conference Article
TC Experimental
CY United States
LA English
AB ***Ion*** ***implantation*** is widely used technological process in the fabrication of semiconductor devices, and contactless techniques to monitor the implantation process and material quality are desired. The excitation-probe nondestructive optical techniques for separate determination of recombination parameters and control of low doses of ***implanted*** ***ions*** in ***Si*** are developed in this work. A modified method of infrared as well as microwave absorption is based on variation of excitation depth of the sample. The mathematical model based on the solution of the continuity equation with layer-by-layer varying parameters, such as carrier bulk lifetime tau b and coefficient of ambipolar diffusion D. The asymptotic decay time tau eff is used as an

experimental parameter to characterize recombination processes of
material, and is described in the effective depth approximation by
analytical solution of this model. To determine recombination parameters
of both layer and substrate, simultaneous investigation of tau eff
reconcilable changes at different excitation depth deff is required. The
transient ***grating*** (TG) technique is based on sinusoidal
refractive index modulation at the surface region by illumination with
light interference patterns and subsequent light diffraction on this
spatial structure. Experimentally, variations of deff are performed by
changing the excitation light wavelength. Non-monotonicity of the
asymptotic recombination time vs. implantation dose was revealed. In the
range of doses 1012-1014 cm-2 (for Ar+) carrier bulk lifetime decreases
with implantation, while at higher dose values the superlinear increase of
surface recombination and decrease of diffusion constant take place. The
transient ***grating*** technique allows one to determine low doses of
B+ and P+ ions in the range of 1010-1015 cm-2.

CC A7220J Charge carriers: generation, recombination, lifetime, and trapping (semiconductors/insulators); A7280C Conductivity of elemental semiconductors; A6170T Doping and implantation of impurities; A6180J Ion beam effects; A3320E Infrared molecular spectra; A7830G Infrared and Raman spectra in inorganic crystals; A7870G Microwave and radiofrequency interactions with condensed matter; A7820D Optical constants and parameters; A6630J Diffusion, migration, and displacement of impurities in solids; B2520C Elemental semiconductors; B2550B Semiconductor doping

CT ARGON; CARRIER LIFETIME; CARRIER MOBILITY; DIFFUSION; ELECTRON-HOLE RECOMBINATION; ELEMENTAL SEMICONDUCTORS; INFRARED SPECTRA; ***ION*** ***IMPLANTATION*** ; LIGHT DIFFRACTION; LIGHT INTERFERENCE; MICROWAVE SPECTRA; REFRACTIVE INDEX; SEMICONDUCTOR DOPING; ***SILICON*** ; SURFACE RECOMBINATION

ST recombination parameters; ***ion implanted layer-substrate Si*** *** structures*** ; excitation-probe nondestructive optical techniques; ***ion implantation*** ; contactless techniques; material quality; low doses control; infrared absorption; microwave absorption; excitation depth variation; continuity equation; carrier bulk lifetime; ambipolar diffusion; asymptotic decay time; effective depth approximation; analytical solution; ***transient grating technique*** ; sinusoidal refractive index modulation; light interference patterns; light diffraction; spatial structure; ***Si:Ar*** ; ***Si***

CHI Si:Ar bin, Ar bin, Si bin, Ar el, Si el, Ar dop; Si sur, Si el

ET Si; D; Ar; Ar+; Ar ip 1; ip 1; B; B+; B ip 1; P; P+; P ip 1; Ar*Si; Si:Ar; Ar doping; doped materials

L7 ANSWER 145 OF 187 INSPEC (C) 2006 FIZ KARLSRUHE on STN

AN 1995:5095606 INSPEC DN A9523-6825-009

TI Transient reflecting ***grating*** for sub-surface analysis: GHz ultrasonic and thermal spectroscopies and imaging.

AU Sawada, T.; Harata, A. (Dept. of Appl. Chem., Tokyo Univ., Japan)

SO Applied Physics A (Materials Science Processing) (Sept. 1995) vol.61, no.3, p.263-8. 42 refs.
CODEN: APHYCC ISSN: 0947-8396

DT Journal

TC Experimental

CY Germany, Federal Republic of

LA English

AB Picosecond time-resolved Transient Reflecting ***Grating*** (TRG) measurements are demonstrated for GHz ultrasonic and thermal spectroscopies of thin films and sub-surface regions of sub- mu m scale. The measurements should be tools for electrochemical interface monitoring and time-resolved imaging. Some results are presented to show ***ion*** - ***implantation*** -induced surface hardening and unusual heat-diffusion behavior near a ***silicon*** surface. A model describing potential dependence of TRG responses at an electrochemical interface is proposed. An image of photoexcited carrier density is compared with a thermal image for a He- ***ion*** - ***implanted*** ***silicon*** wafer to demonstrate the time-resolved imaging.

CC A6825 Mechanical and acoustical properties of solid surfaces and interfaces; A6550 Thermodynamic properties and entropy; A0760H Optical refractometry and reflectometry; A4385G Measurement by acoustic techniques; A0720D Thermometry; A0762 Detection of radiation (bolometers, photoelectric cells, i.r. and submillimetre waves detection)

CT INFRARED IMAGING; INTERFACE STRUCTURE; ***ION*** ***IMPLANTATION*** ; PHOTOACOUSTIC SPECTROSCOPY; PHOTOTHERMAL SPECTROSCOPY; SURFACE

HARDENING; SURFACE STRUCTURE; THERMAL DIFFUSIVITY; THIN FILMS; ULTRASONIC IMAGING
ST subsurface analysis; ***transient reflecting gratings*** ; GHz ultrasonic spectroscopy; acoustic imaging; thermal spectroscopy; infrared imaging; thin films; electrochemical interface monitoring tool; time resolved imaging; surface hardening monitoring; photoexcited carrier density; ***He ion implanted Si*** ; temperature dependence; 100 to 300 K
PHP temperature 1.0E+02 to 3.0E+02 K
ET He; Si

L7 ANSWER 146 OF 187 INSPEC (C) 2006 IEE on STN
AN 1995:5070624 INSPEC DN A9521-4260B-041; B9511-4320J-127
TI Two-longitudinal-mode laser diodes.
AU Iio, S.; Suehiro, M.; Hirata, T. (Optoelectron. Lab., Yokogawa Electr. Corp., Tokyo, Japan); Hidaka, T.
SO IEEE Photonics Technology Letters (Sept. 1995) vol.7, no.9, p.959-61. 9 refs.
Price: CCCC 1041-1135/95/$04.00
CODEN: IPTLEL ISSN: 1041-1135
DT Journal
TC Practical; Experimental
CY United States
LA English
AB Two-longitudinal-mode distributed-Bragg-reflector laser diodes have been fabricated for wavelength-division-multiplexing communication systems, two-wavelength optical measurement systems, and optical data processing systems. A Bragg reflector with a periodic-phase-shift ***grating*** is adopted for two-longitudinal-mode operation. Active and passive waveguides are monolithically integrated by compositional disordering of the quantum well using ***silicon*** ***ion*** ***implantation*** .
CC A4260B Design of specific laser systems; A4255P Lasing action in semiconductors; A4280S Optical communications devices; A4280F Gratings, echelles; A4282 Integrated optics; B4320J Semiconductor lasers; B6260 Optical links and equipment; B4140 Integrated optics
CT DIFFRACTION ***GRATINGS*** ; DISTRIBUTED BRAGG REFLECTOR LASERS; ***ION*** ***IMPLANTATION*** ; LASER MODES; OPTICAL INFORMATION PROCESSING; OPTICAL TRANSMITTERS; QUANTUM WELL LASERS; WAVEGUIDE LASERS; WAVELENGTH DIVISION MULTIPLEXING
ST two-longitudinal-mode laser diodes; distributed-Bragg-reflector laser diodes; wavelength-division-multiplexing communication systems; two-wavelength optical measurement systems; optical data processing systems; ***periodic-phase-shift grating*** ; two-longitudinal-mode operation; passive waveguides; active waveguides; monolithic integration; compositional disordering; ***Si ion implantation*** ; ***GaAs-AlGaAs:Si***
CHI GaAs-AlGaAs:Si int, AlGaAs:Si int, AlGaAs int, GaAs int, Al int, As int, Ga int, Si int, AlGaAs:Si ss, AlGaAs ss, Al ss, As ss, Ga ss, Si ss, GaAs bin, As bin, Ga bin, Si el, Si dop
ET Si; Al*As*Ga*Si; Al sy 4; sy 4; As sy 4; Ga sy 4; Si sy 4; GaAs; Ga cp; cp; As cp; AlGaAs:Si; Si doping; doped materials; Al cp; GaAs-AlGaAs:Si; Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; AlGaAs; As*Ga; As sy 2; sy 2; Ga sy 2; Al; As; Ga

L7 ANSWER 147 OF 187 INSPEC (C) 2006 IEE on STN
AN 1995:5058870 INSPEC DN A9521-4260B-002; B9511-4320J-033
TI GaAs quantum well distributed Bragg reflection laser with AlGaAs/GaAs superlattice ***gratings*** fabricated by focused ion beam mixing.
AU Steckl, A.J.; Chen, P. (Dept. of Electr. & Comput. Eng., Cincinnati Univ., OH, USA); Cao, X.; Jackson, H.E.; Kumar, M.; Boyd, J.T.
SO Applied Physics Letters (10 July 1995) vol.67, no.2, p.179-81. 21 refs.
Price: CCCC 0003-6951/95/67(2)/179/3/$6.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB GaAs quantum well (QW) lasers with distributed Bragg reflection (DBR) Al0.3Ga0.7As/GaAs supperlattice ***gratings*** have been fabricated by the single-step, maskless focused ion beam (FIB) mixing. 200 keV ***Si*** ++ FIB implantation with a beam diameter of approximately 60-70

nm and a dose of 1014 cm-2 was used to obtain localized compositional mixing. The DBR ***grating*** period was 350 nm, corresponding to a third order ***grating*** matched to the emission from the 30 nm wide QW. Lasing operation was examined by optical pumping. With a pumping power 1.6* the threshold value, lasing modes were observed near 827 nm, with a spacing of 3 AA and a linewidth of 1.5 AA.

CC A4260B Design of specific laser systems; A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A4255P Lasing action in semiconductors; A4285D Optical fabrication, surface grinding; A6180J Ion beam effects; B4320J Semiconductor lasers

CT ALUMINIUM COMPOUNDS; DIFFRACTION ***GRATINGS*** ; DISTRIBUTED BRAGG REFLECTOR LASERS; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; ION BEAM MIXING; ***ION*** ***IMPLANTATION*** ; OPTICAL FABRICATION; OPTICAL PUMPING; QUANTUM WELL LASERS; SEMICONDUCTOR DOPING; SEMICONDUCTOR SUPERLATTICES

ST lasing operation; distributed Bragg reflection laser; ***superlattice*** *** gratings*** ; focused ion beam mixing; Al0.3Ga0.7As/GaAs; localized compositional mixing; emission; optical pumping; pumping power; threshold value; lasing modes; 200 keV; 827 nm; 60 to 70 nm; 30 nm; AlGaAs-GaAs

CHI AlGaAs-GaAs int, AlGaAs int, GaAs int, Al int, As int, Ga int, AlGaAs ss, Al ss, As ss, Ga ss, GaAs bin, As bin, Ga bin

PHP electron volt energy 2.0E+05 eV; wavelength 8.27E-07 m; size 6.0E-08 to 7.0E-08 m; size 3.0E-08 m

ET As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; AlGaAs; Al cp; Al0.3Ga0.7As; Si; Si++; Si ip 1; ip 1; V; AlGaAs-GaAs; Al; As; Ga

L7 ANSWER 148 OF 187 INSPEC (C) 2006 IEE on STN

AN 1994:4835416 INSPEC DN A9502-6170T-007; B9501-2550B-027

TI Local Ga ***implantation*** with focused ***ion*** beam and ambipolar lateral carrier transport in strained Si1-xGex/ ***Si*** quantum wells.

AU Okubo, A.; Fukatsu, A.S.; Shiraki, Y. (Res. Center for Adv. Sci. & Technol., Tokyo Univ., Japan)

SO Applied Physics Letters (14 Nov. 1994) vol.65, no.20, p.2582-4. 19 refs.
Price: CCCC 0003-6951/94/65(20)/2582/3/$6.00
CODEN: APPLAB ISSN: 0003-6951

DT Journal

TC Practical

CY United States

LA English

AB Lateral carrier diffusion in a strained Si1-xGex/ ***Si*** quantum well (QW) is reported using a periodic two-dimensional ***grating*** geometry defined by focused ***ion*** beam local-Ga- ***implantation*** . With systematically changing the ***grating*** period, we observed a clear dominance switch of steady-state photoluminescence (PL) intensity between defect-related luminescence from Ga-implanted ***grating*** stripes and PL emanating from the centered QW region. Fitting to a simple diffusion model, the lateral diffusion length was found to extend to several microns at low temperatures, whereas it increases with temperature up to 58 K.

CC A6170T Doping and implantation of impurities; A6170W Impurity concentration, distribution, and gradients; A6180J Ion beam effects; A7340L Semiconductor-to-semiconductor contacts, p-n junctions, and heterojunctions; B2550B Semiconductor doping; B2530C Semiconductor superlattices, quantum wells and related structures; B2520M Other semiconductor materials; B2520C Elemental semiconductors

CT CARRIER MOBILITY; ELEMENTAL SEMICONDUCTORS; GALLIUM; GE- ***SI*** ALLOYS; ***ION*** ***IMPLANTATION*** ; SEMICONDUCTOR DOPING; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR QUANTUM WELLS; ***SILICON***

ST local Ga implantation; focused ion beam; ambipolar lateral carrier transport; ***strained Si1-xGex/Si quantum wells*** ; ***periodic*** *** two-dimensional grating geometry*** ; steady-state photoluminescence; lateral diffusion length; semiconductor; 58 K; ***SiGe-Si:Ga***

CHI SiGe-Si:Ga int, Si:Ga int, SiGe int, Ga int, Ge int, Si int, Si:Ga bin, SiGe bin, Ga bin, Ge bin, Si bin, Ga el, Si el, Ga dop

PHP temperature 5.8E+01 K

ET Ga; Ge*Si; Ge sy 2; sy 2; Si sy 2; Si1-xGex; Si cp; cp; Ge cp; Ge-Si; Ga*Ge*Si; Ga sy 3; sy 3; Ge sy 3; Si sy 3; SiGe; Ga doping; doped materials; SiGe-Si:Ga; Ga*Si; Ga sy 2; Si:Ga; Ge; Si

L7 ANSWER 149 OF 187 INSPEC (C) 2006 IEE on STN

AN 1994:4828070 INSPEC DN A9501-6170T-001; B9501-2550B-002

TI Transient reflecting ***grating*** study of ***ion*** - ***implanted*** semiconductors.
AU Harata, A.; Nishimura, H.; Shen, Q.; Tanaka, T.; Sawada, T. (Dept. of Ind. Chem., Tokyo Univ., Japan)
SO Journal de Physique IV (Colloque) (July 1994) vol.4, no.C7, p.C7/159-62. 9 refs.
CODEN: JPICEI ISSN: 1155-4339
Conference: 8th International Topical Meeting on Photoacoustic and Photothermal Phenomena. Pointe a Pitre, Guadeloupe, 22-25 Jan 1994
Sponsor(s): Univ. Pierre et Marie Curie; Univ. Antilles-Guyane; et al
DT Conference Article; Journal
TC Experimental
CY France
LA English
AB Surface modification of ***Si*** (100) wafers induced by argon- ***ion*** ***implantation*** (***ion*** energy, 300 keV; dose, 1011-1017 atoms/cm2) was investigated using a transient reflecting ***grating*** technique. Effects of the implantation on velocity, intensity and onset time of surface acoustic waves (SAW) were discussed accompanying the acoustic anisotropy. SAW velocity dispersion was also examined for one of the lightly ***ion*** - ***implanted*** sample (dose, 1011 atoms/cm2).
CC A6170T Doping and implantation of impurities; A6180J Ion beam effects; A6170W Impurity concentration, distribution, and gradients; A6590 Other topics in thermal properties of condensed matter; A7280C Conductivity of elemental semiconductors; A6825 Mechanical and acoustical properties of solid surfaces and interfaces; B2550B Semiconductor doping; B2520C Elemental semiconductors
CT ARGON; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; PHOTOTHERMAL EFFECTS; SEMICONDUCTOR DOPING; ***SILICON*** ; SURFACE ACOUSTIC WAVES
ST ***ion-implanted semiconductors*** ; surface modification; ***transient reflecting grating technique*** ; surface acoustic waves; acoustic anisotropy; SAW velocity dispersion; ***Si(100) wafers*** ; ***Si:Ar***
CHI Si:Ar sur, Ar sur, Si sur, Si:Ar bin, Ar bin, Si bin, Ar el, Si el, Ar dop
ET Si; Ar*Si; Si:Ar; Ar doping; doped materials; Ar

L7 ANSWER 150 OF 187 INSPEC (C) 2006 IEE on STN
AN 1994:4710161 INSPEC DN A9416-4280F-006
TI Nonlinear multimode theory of generation of surface defect-deformation structures under the action of high-power laser radiation.
AU Emel'yanov, V.I.; Shlykov, Yu.G. (Lomonosov (M.V.) State Univ., Moscow, Russia)
SO Bulletin of the Russian Academy of Sciences. Physics (1993) vol.57, no.12, p.2070-89. 31 refs.
Price: CCCC 1062-8738/93/$50.00
ISSN: 1062-8738
Translation of: Izvestiya Rossiiskoi Akademii Nauk. Seriya Fizicheskaya (1993) vol.57, no.12, p.18-38. 31 refs.
ISSN: 0367-6765
Conference: National Conference 'Laser Technologies-93'. Shatura, Russia, 14-16 April 1993
DT Conference Article; Journal; Translation Abstracted
TC Theoretical
CY Russian Federation; United States
LA English
AB We develop a nonlinear multimode theory of the generation of surface defect-deformation (DD) periodic structures under the action of high-energy beams. A nonlinear kinetic equation for Fourier amplitudes of DD ***gratings*** is derived. The derived equation can be reduced to a rate equation including diffusion and drift in the q-space. A general solution to this equation is found, which gives an opportunity to describe generation of multimode or single-mode DD structures. Spacings, times of formation, and stationary amplitudes of DD ***gratings*** are calculated. The results of calculations are used for interpreting experimental data on the generation of DD ***gratings*** in ***Si*** under the action of millisecond laser pulses and ***ion*** ***implantation*** .
CC A4280F Gratings, echelles; A6820 Solid surface structure; A6180B Ultraviolet, visible and infrared radiation; A4260K Laser beam applications; A6170 Defects in crystals; A7865 Optical properties of thin

films; A4285D Surface grinding, fabrication
CT CRYSTAL DEFECTS; DIFFRACTION ***GRATINGS*** ; LASER BEAM APPLICATIONS; OPTICAL WORKSHOP TECHNIQUES; SURFACE STRUCTURE
ST nonlinear kinetic equation; high-power laser radiation; nonlinear multimode theory; generation; surface defect-deformation periodic structures; Fourier amplitudes; rate equation; q-space; drift; diffusion; millisecond laser pulses; ***ion implantation*** ; ***defect-deformation gratings*** ; stationary amplitudes; spacings; times of formation; single mode defect-deformation structures; multimode defect-deformation structures
ET Si

L7 ANSWER 151 OF 187 INSPEC (C) 2006 IEE on STN
AN 1994:4694367 INSPEC DN A9415-0785-005; B9408-4190F-001
TI Electron-beam-deposited Mo/ ***Si*** and MoxSiy/ ***Si*** multilayer x-ray mirrors and ***gratings*** .
AU Schmiedeskamp, B.; Kloidt, A.; Stock, H.-J.; Kleineberg, U.; Dohring, T.; Propper, M.; Rahn, S.; Hilgers, K.; Heidemann, B.; Tappe, T.; Heinzmann, U. (Fakultat fur Phys., Bielefeld Univ., Germany); Krumrey, M.K.; Muller, P.; Scholze, F.; Heidemann, K.F.
SO Optical Engineering (April 1994) vol.33, no.4, p.1314-21. 38 refs.
Price: CCCC 0091-3286/94/$6.00
CODEN: OPEGAR ISSN: 0091-3286
DT Journal
TC Experimental
CY United States
LA English
AB For the wavelength region above the ***Si*** -L edge normal incidence, soft x-ray mirrors are produced with peak reflectivities close to 60%. The multilayer systems consist of molybdenum and ***silicon*** and are fabricated by electron beam evaporation in ultrahigh vacuum. A smoothing of the boundaries, and thereby a drastic enhancement of the reflectivity, is obtained by thermal treatment of the multilayer systems during growth. The thermal stability of the multilayer stacks could be improved considerably up to 850 degrees C by mixing Mo and ***Si*** in the absorber layers and producing thus MoxSiy/ ***Si*** multilayers with x and y denoting the amounts of Mo and ***Si*** in the absorber layer, respectively. First attempts are reported to produce mirrors with a bilayer thickness of 2.6 nm. An improvement in the quality of these interfaces can be obtained by ***bombardment*** with Ar+ ***ions*** . We report on normal incidence reflectivity measurements of the mirrors with synchrotron radiation and finally on the normal incidence diffraction efficiencies of a Mo/ ***Si*** multilayer coated ***grating*** , for which values of 5.5% are achieved for the +1'st and -1'st diffraction orders.
CC A0785 X-ray, gamma-ray instruments and techniques; A8115G Vacuum deposition; A4280F Gratings, echelles; A4285 Optical testing and workshop techniques; A4278H Coatings; B4190F Optical coatings and filters; B0520F Vapour deposition
CT DIFFRACTION ***GRATINGS*** ; ELECTRON BEAM DEPOSITION; ELEMENTAL SEMICONDUCTORS; MIRRORS; MOLYBDENUM; MOLYBDENUM ALLOYS; OPTICAL FILMS; OPTICAL WORKSHOP TECHNIQUES; ***SILICON*** ; X-RAY OPTICS
ST electron-beam-deposited; ***Mo/Si*** ; ***MoxSiy/Si*** ; multilayer x-ray mirrors; ***gratings*** ; ***Si-L edge*** ; normal incidence; soft x-ray mirrors; peak reflectivities; electron beam evaporation; ultrahigh vacuum; thermal treatment; multilayer systems; thermal stability; multilayer stacks; absorber layers; absorber layer; bilayer thickness; Ar+ ions; normal incidence reflectivity measurements; synchrotron radiation; normal incidence diffraction efficiencies; 5.5 percent; 850 C; ***Mo-Si*** ; ***MoSi-Si***
CHI Mo-Si int, Mo int, Si int, Mo el, Si el; MoSi-Si int, MoSi int, Mo int, Si int, MoSi bin, Mo bin, Si bin, Si el
PHP efficiency 5.5E+00 percent; temperature 1.12E+03 K
ET Mo; Mo*Si; Mo sy 2; sy 2; Si sy 2; MoxSiy/Si; Mo cp; cp; Si cp; Si; C; Ar; Ar+; Ar ip 1; ip 1; MoxSiy; Mo-Si; MoSi; MoSi-Si

L7 ANSWER 152 OF 187 INSPEC (C) 2006 IEE on STN
AN 1994:4673403 INSPEC DN A9412-0130C-040; B9406-0100-123
TI Proceedings of Europhysics Industrial Workshop on Nanometre- Scale Methods in x-ray Technology.
SO Eindhoven, Netherlands: Philips Res. Lab, 1993. 52 pp.
Conference: Veldhoven, Netherlands, 11-13 Oct 1993

Sponsor(s): Comm. Eur. Communities; Found. Physica; Newport B.V.; et al
DT Conference Proceedings
CY Netherlands
LA English
AB The following topics were dealt with: X-ray diffuse scattering; X-ray reflectometry; X-ray reflection from rough periodic multilayers; thin layer diffraction; surface ***grating*** diffraction; multilayer diffraction ***grating*** properties; ***ion*** ***bombardment*** application in the modification of Mo/ ***Si*** multilayers; sputtered multilayers design and manufacture; multilayer structures application; X-ray standing wave method; soft X-ray spectrometry; nanometer scale method in X-ray spectroscopy for space research; soft X-ray reflectometry; dispersive elements design and manufacture; evaluation of roughness in multilayer structures; laser plasma sources for soft X-ray projection lithography; Helios X-ray source; submicron in micropositioning; and X-ray ***gratings*** and projection lithography.
CC A0130C Conference proceedings; A0785 X-ray, gamma-ray instruments and techniques; A6110 X-ray determination of structures; A5250J Plasma production and heating by laser beams; B0100 General electrical engineering topics; B2550G Lithography; B7450 X-ray and gamma-ray equipment
CT DIFFRACTION ***GRATINGS*** ; ION BEAM APPLICATIONS; NANOTECHNOLOGY; PLASMA PRODUCTION AND HEATING BY LASER BEAM; REFLECTOMETRY; SPACE RESEARCH; SPUTTERED COATINGS; SURFACE TOPOGRAPHY; X-RAY CRYSTALLOGRAPHY; X-RAY LITHOGRAPHY; X-RAY PRODUCTION; X-RAY SPECTROMETERS; X-RAY SPECTROSCOPY
ST semiconductors; X-ray diffuse scattering; X-ray reflectometry; X-ray reflection; rough periodic multilayers; thin layer diffraction; ***surface grating diffraction*** ; ***multilayer diffraction*** *** grating*** ; ***ion bombardment*** ; sputtered multilayers design; manufacture; X-ray standing wave method; soft X-ray spectrometry; nanometer scale method; X-ray spectroscopy; space research; dispersive elements design; laser plasma sources; soft X-ray projection lithography; Helios X-ray source; micropositioning; ***X-ray gratings*** ; ***Mo-Si multilayers***
CHI Mo-Si int, Mo int, Si int, Mo el, Si el
ET Mo; Mo*Si; Mo sy 2; sy 2; Si sy 2; Mo-Si; Si

L7 ANSWER 153 OF 187 INSPEC (C) 2006 IEE on STN
AN 1994:4672506 INSPEC DN A9412-4265K-020; B9406-4340-093
TI Photoinduced second-harmonic generation in fibers ***doped*** with rare-earth ***ions*** .
AU Dianov, E.M. (Gen. Phys. Inst., Acad. of Sci., Moscow, Russia); Kornienko, L.S.; Rybaltovsky, A.O.; Chernov, P.V.; Yatsenko, Yu.P.
SO Optics Letters (1 April 1994) vol.19, no.7, p.439-41. 6 refs.
Price: CCCC 0146-9592/94/070439-03$6.00/0
CODEN: OPLEDP ISSN: 0146-9592
DT Journal
TC Experimental
CY United States
LA English
AB Photoinduced second-harmonic generation in silica fibers doped with Er3+, Sm3+, and Tb3+ has been investigated. Er3+-doped fibers have been found to tune a chi (2) ***grating*** easily to the mode structure of the laser radiation, whereas Sm3+-doped fibers have been found to possess the greatest resistance to chi (2) ***grating*** erasure by radiation at 532 nm. From the beginning of the preparation processes, the third harmonic at 355 nm is registered in all the fibers.
CC A4265K Harmonic generation, frequency conversion, parametric oscillation and amplification; A4281F Other optical properties; B4340 Nonlinear optics and devices; B4125 Fibre optics
CT ERBIUM; OPTICAL FIBRES; OPTICAL HARMONIC GENERATION; SAMARIUM; ***SILICON*** COMPOUNDS; TERBIUM
ST photoinduced second-harmonic generation; ***rare-earth ion doped*** *** fibers*** ; aluminosilicate fibers; laser radiation mode structure; third harmonic; ***chi (2) grating erasure*** ; germanosilicate fibers; temporal evolution; erasure rates; 532 nm; 355 nm; Al2O3SiO2:Er; Al2O3SiO2:Sm; Al2O3SiO2:Tb; GeO2SiO2:Er
CHI Al2O3SiO2:Er ss, Al2O3SiO2 ss, Al2O3 ss, SiO2 ss, Al2 ss, Al ss, Er ss, O2 ss, O3 ss, Si ss, O ss, Er el, Er dop; Al2O3SiO2:Sm ss, Al2O3SiO2 ss, Al2O3 ss, SiO2 ss, Al2 ss, Al ss, O2 ss, O3 ss, Si ss, Sm ss, O ss, Sm el,

Sm dop; Al2O3SiO2:Tb ss, Al2O3SiO2 ss, Al2O3 ss, SiO2 ss, Al2 ss, Al ss,
O2 ss, O3 ss, Si ss, Tb ss, O ss, Tb el, Tb dop; GeO2SiO2:Er ss, GeO2SiO2
ss, GeO2 ss, SiO2 ss, Er ss, Ge ss, O2 ss, Si ss, O ss, Er el, Er dop

PHP wavelength 5.32E-07 m; wavelength 3.55E-07 m

ET Er; Er3+; Er ip 3; ip 3; Sm; Sm3+; Sm ip 3; Tb; Tb3+; Tb ip 3; Al*Er*O*Si;
Al sy 4; sy 4; Er sy 4; O sy 4; Si sy 4; Al2O3SiO2:Er; Er doping; doped
materials; Al cp; cp; O cp; Si cp; Al*O*Si*Sm; Sm sy 4; Al2O3SiO2:Sm; Sm
doping; Al*O*Si*Tb; Tb sy 4; Al2O3SiO2:Tb; Tb doping; Er*Ge*O*Si; Ge sy 4;
GeO2SiO2:Er; Ge cp; Al*O*Si; Al sy 3; sy 3; O sy 3; Si sy 3; Al2O3SiO;
Al*O; Al2O; O*Si; SiO; Al; O; Si; Ge*O*Si; Ge sy 3; GeO2SiO; Ge*O; GeO; Ge

L7 ANSWER 154 OF 187 INSPEC (C) 2006 IEE on STN

AN 1994:4663399 INSPEC DN A9411-6180B-008

TI The nonlinear multimode theory of defect deformational ordered surface
structures generation by strong laser beams.

AU Emel'yanov, V.I.; Shlykov, Yu.G. (Int. Laser Center, Moscow State Univ.,
Russia)

SO Laser Physics (Jan.-Feb. 1994) vol.4, no.1, p.153-67. 31 refs.
CODEN: LAPHEJ ISSN: 1054-660X

DT Journal

TC Theoretical; Experimental

CY United States

LA English

AB The multimode nonlinear theory of formation of surface periodic point
defect deformational (DD) structures is developed. The general set of
coupled nonlinear kinetic equations for DD ***gratings*** of the
Fourier amplitudes is derived and reduced to the rate equation with
allowance for diffusion and drift in q-space. The conditions of generation
of either multimode or single-mode DD structures are investigated, and
periods, times of formation, and stationary amplitudes of DD
gratings are determined. The theoretical results are used for
interpretation of previously obtained experimental results on the
generation of DD ***gratings*** in ***Si*** under millisecond
laser irradiation and under ***ion*** ***implantation*** .

CC A6180B Ultraviolet, visible and infrared radiation; A6170E Other point
defects

CT LASER BEAM EFFECTS; LASER MODES; POINT DEFECTS; SURFACE STRUCTURE

ST surface periodic point defect deformational structures; ***defect***
*** deformational gratings*** ; single mode defect deformational structures;
multimode defect deformational structures; nonlinear multimode theory;
defect deformational ordered surface structures generation; strong laser
beams; general set; coupled nonlinear kinetic equations; Fourier
amplitudes; diffusion; drift; q-space; stationary amplitudes; ***ion***
*** implantation***

ET Si

L7 ANSWER 155 OF 187 INSPEC (C) 2006 IEE on STN

AN 1994:4568389 INSPEC DN A9404-7847-001

TI Fast photothermal relaxation processes in metals and semiconductors
studied using transient reflecting ***gratings*** .

AU Nishimura, H.; Harata, A.; Sawada, T. (Dept. of Ind. Chem., Tokyo Univ.,
Japan)

SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes)
(Nov. 1993) vol.32, no.11A, p.5149-54. 20 refs.
CODEN: JAPNDE ISSN: 0021-4922

DT Journal

TC Experimental

CY Japan

LA English

AB Dynamic processes forming the transient reflecting ***gratings*** are
experimentally investigated in the picosecond time regime for both metals
and semiconductors. The shapes of the initial parts of the ***grating***
signals were examined with respect to the pump and probe intensities,
optical configurations of polarization directions and ***ion***
implantation doses. For metals, the rising part is influenced by
the temperature ***grating*** independently of the corrugation
grating due to surface acoustic waves. For ***silicon*** , the
peak or shoulder at the initial part is attributed to the concentration
grating of the photoexcited carriers, and it directly reflects the
photothermal relaxation rate.

CC A7847 Time-resolved optical spectroscopies and other ultrafast optical
measurements in condensed matter; A4280F Gratings, echelles; A6590 Other

topics in thermal properties of condensed matter; A4280W Ultrafast optical techniques; A6825 Mechanical and acoustical properties of solid surfaces and interfaces
CT DIFFRACTION ***GRATINGS*** ; HIGH-SPEED OPTICAL TECHNIQUES; ***ION*** ***IMPLANTATION*** ; METALS; PHOTOTHERMAL EFFECTS; SEMICONDUCTORS; SURFACE ACOUSTIC WAVES
ST photothermal relaxation; metals; semiconductors; ***transient reflecting*** *** gratings*** ; dynamic processes; ***ion implantation*** ; ***temperature grating*** ; surface acoustic waves; ***corrugation*** *** grating*** ; photoexcited carriers; ***concentration grating*** ; picosecond time regime; ***Si***
CHI Si sur, Si el
ET Si

L7 ANSWER 156 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4559661 INSPEC DN A9403-6170T-011; B9402-2550B-015
TI Enhanced photoluminescence from AlGaAs/GaAs superlattice ***gratings*** fabricated by ***Si*** FIB implantation.
AU Steckl, A.J.; Chen, P.; Choo, A.G.; Jackson, H.E.; Boyd, J.T. (Cincinnati Univ., OH, USA); Ezis, A.; Pronko, P.P.; Novak, S.W.; Kolbas, R.M.
SO Semiconductor Heterostructures for Photonic and Electronic Applications Symposium
Editor(s): Tu, C.W.; Houghton, D.C.; Tung, R.T.
Pittsburgh, PA, USA: Mater. Res. Soc, 1993. p.319-24 of xvii+836 pp. 6 refs.
Conference: Boston, MA, USA, 30 Nov-4 Dec 1992
DT Conference Article
TC Experimental
CY United States
LA English
AB Results are presented on the fabrication of optical ***gratings*** on an Al0.3Ga0.7As/GaAs superlattice (SL) with equal 3.5 nm barrier and well widths, by using locally FIB-enhanced mixing. As the first step, the mechanism of the mixing was studied. ***Si*** ++ was accelerated to 50 kV and 100 kV and implanted at doses ranging from 1013 to 1015/cm2. A rapid thermal anneal of 10 s at 950 degrees C was utilized. The average Al inter-diffusion coefficient and length were calculated as a function of FIB dose from SIMS depth profiling. The mixing was significantly enhanced by the FIB ***implantation*** . The ***ion*** dose as low as 1*1014/cm2 followed by RTA yields a mixing parameter of approximately 90% and results in a two-order of magnitude increase in the diffusion coefficient, to a value of 4.5*10-14 cm2/sec, in contrast to 1.3*10-16 cm2/sec from RTA-only. The maximum mixing occurred in the region where neither ***Si*** ions nor vacancies have their maximum concentration. Instead, it coincides with the location of the positive maximum of the second derivative of the vacancy concentration profile. This fact suggests that in the time frame of RTA and with low dose, the diffusion of nonequilibrium point defects plays a major role in the process of enhancing Al-Ga interdiffusion. DBR optical ***gratings*** , consisting of thousands of spacing lines with 350 nm period, were fabricated with a 1000 kV FIB dose of 2*1013 and 1*1014/cm2. Photoluminescence (PL) spectra were taken from the ***grating*** region as well as the unimplanted superlattice region. The PL intensity from cavity region of the DBR was about 16 times higher than that from the original SL. This PL enhancement was verified to occur in the cavity region only by spatially scanning over the entire sample. A possible mechanism for this PL enhancement is optical feedback provided by the ***gratings*** .
CC A6170T Doping and implantation of impurities; A6170A Annealing processes; A6822 Surface diffusion, segregation and interfacial compound formation; A7855D Tetrahedrally bonded nonmetals; A6180J Ions; A6630N Chemical interdiffusion; A7865J Nonmetals; B2550B Semiconductor doping
CT ALUMINIUM COMPOUNDS; ANNEALING; CHEMICAL INTERDIFFUSION; DIFFRACTION ***GRATINGS*** ; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; ION BEAM MIXING; ***ION*** ***IMPLANTATION*** ; LUMINESCENCE OF INORGANIC SOLIDS; PHOTOLUMINESCENCE; RAPID THERMAL PROCESSING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR SUPERLATTICES; ***SILICON*** ; SURFACE DIFFUSION; VACANCIES (CRYSTAL)
ST semiconductors; photoluminescence; ***optical gratings*** ; superlattice; FIB-enhanced mixing; rapid thermal anneal; inter-diffusion coefficient; SIMS depth profiling; implantation; vacancies; point defects; ***DBR optical gratings*** ; 950 degC; ***Al0.3Ga0.7As:Si-GaAs***
CHI Al0.3Ga0.7As:Si-GaAs int, Al0.3Ga0.7As:Si int, Al0.3Ga0.7As int, Al0.3

int, Ga0.7 int, GaAs int, Al int, As int, Ga int, Si int, Al0.3Ga0.7As:Si ss, Al0.3Ga0.7As ss, Al0.3 ss, Ga0.7 ss, Al ss, As ss, Ga ss, Si ss, GaAs bin, As bin, Ga bin, Si el, Si dop
PHP temperature 1.22E+03 K
ET Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; AlGaAs; Al cp; cp; Ga cp; As cp; As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Si; Al0.3Ga0.7As; Si++; Si ip 1; ip 1; C; Al; Al*Ga; Al sy 2; Al-Ga; V; Al*As*Ga*Si; Al sy 4; sy 4; As sy 4; Ga sy 4; Si sy 4; Al0.3Ga0.7As:Si; Si doping; doped materials; Al0.3Ga0.7As:Si-GaAs; Ga; As

L7 ANSWER 157 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4530719 INSPEC DN A9401-6825-003
TI Laser-stimulated scattering microscope study of an ***ion*** - ***implanted*** ***silicon*** surface.
AU Harata, A.; Shen, Q.; Tanaka, T.; Sawada, T. (Dept. of Ind. Chem., Tokyo Univ., Japan)
SO Japanese Journal of Applied Physics, Part 1 (Regular Papers & Short Notes) (Aug. 1993) vol.32, no.8, p.3633-8. 27 refs.
CODEN: JAPNDE ISSN: 0021-4922
DT Journal
TC Theoretical; Experimental
CY Japan
LA English
AB Surface modification of a ***silicon*** single crystal induced by argon ***ion*** ***implantation*** (light dose, 300 keV, 1011 atoms/cm2) has been investigated using a laser-stimulated scattering microscope, whose operational principle is based on microscopic measurements of transient reflecting ***gratings*** (TRGs). One-dimensional distributions of various material parameters, velocity, onset time and attenuation coefficient of surface acoustic waves and parameters relating to thermal diffusion, thermal expansion and optical absorption, are determined by analyzing the TRG responses measured sequentially along a line across the implanted and unimplanted regions. Some theoretical aspects are presented for the empirical equation used in deducing these parameters from the TRG responses. The change in the anisotropic property of the acoustic velocity is also discussed.
CC A6825 Mechanical and acoustical properties of solid surfaces and interfaces; A8160C Semiconductors; A6170T Doping and implantation of impurities; A6180J Ions; A6265 Acoustic properties of solids; A4320 General linear acoustics; A6670 Nonelectronic thermal conduction and heat-pulse propagation in nonmetallic solids; A6570 Thermal expansion and thermomechanical effects; A4390 Other topics in acoustics; A7820D Optical constants and parameters; A6180B Ultraviolet, visible and infrared radiation; A7920D Laser-light impact phenomena; A0765 Optical spectroscopy and spectrometers
CT ACOUSTIC WAVE ABSORPTION; ACOUSTIC WAVE VELOCITY; ARGON; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; LASER BEAM EFFECTS; LIGHT ABSORPTION; PHOTOACOUSTIC SPECTRA; ***SILICON*** ; SURFACE ACOUSTIC WAVES; SURFACE TREATMENT; THERMAL DIFFUSION; THERMAL EXPANSION
ST semiconductor; acoustic onset time; SAW; acoustic attenuation coefficient; 1D distribution; laser-stimulated scattering microscope; ***transient*** *** reflecting gratings*** ; surface acoustic waves; thermal diffusion; thermal expansion; optical absorption; empirical equation; anisotropic property; acoustic velocity; ***Si surface modification*** ; ***Si:Ar+ implanted surface***
CHI Si sur, Si el; Si:Ar sur, Ar sur, Si sur, Si:Ar bin, Ar bin, Si bin, Ar el, Si el, Ar dop
ET D; Si; Ar*Si; Si:Ar; Si:Ar+; Ar+ doping; doped materials; Ar doping; Ar

L7 ANSWER 158 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4529826 INSPEC DN A9401-4280F-002
TI Maskless writing of submicrometer ***gratings*** in fused silica by focused ***ion*** beam ***implantation*** and differential wet etching.
AU Albert, J.; Hill, K.O.; Malo, B.; Johnson, D.C.; Bilodeau, F. (Communication Res. Centre, Ottawa, Ont., Canada); Templeton, I.M.; Brebner, J.L.
SO Applied Physics Letters (25 Oct. 1993) vol.63, no.17, p.2309-11. 14 refs.
Price: CCCC 0003-6951/93/63(17)/2309/3/$6.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental

CY United States
LA English
AB Surface relief ***gratings*** with submicrometer periods have been fabricated in silica by ***ion*** ***implantation*** with a focused ***ion*** beam, followed by etching in diluted hydrofluoric acid. Implanted silica etches three times faster than unimplanted silica and groove depths of the order of 300 nm have been achieved. The method does not require photolithography or masking layers, allows arbitrary patterns to be defined, and may be used to fabricate diffractive optical elements or ***grating*** filters in optical waveguides.
CC A4280F Gratings, echelles; A4285D Surface grinding, fabrication
CT DIFFRACTION ***GRATINGS*** ; ETCHING; FOCUSED ION BEAM TECHNOLOGY; ***ION*** ***IMPLANTATION*** ; OPTICAL WORKSHOP TECHNIQUES; ***SILICON*** COMPOUNDS
ST maskless writing; ***submicrometer gratings*** ; fused silica; ***focused ion beam implantation*** ; differential wet etching; ***surface relief gratings*** ; fabrication; diluted hydrofluoric acid; diffractive optical elements; ***grating filters*** ; optical waveguides; patterns; groove; 300 nm; SiO2; HF
CHI SiO2 sur, O2 sur, Si sur, O sur, SiO2 bin, O2 bin, Si bin, O bin; HF bin, F bin, H bin
PHP size 3.0E-07 m
ET O*Si; SiO2; Si cp; cp; O cp; F*H; HF; H cp; F cp; SiO; O; Si

L7 ANSWER 159 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4484117 INSPEC DN A9321-6170W-001; B9311-2550B-002
TI Lateral straggle of ***Si*** and Be focused- ***ion*** beam ***implanted*** in GaAs.
AU Vignaud, D.; Musil, C.R.; Etchin, S.; Antoniadis, D.A.; Melngailis, J. (Res. Lab. of Electron., MIT, Cambridge, MA, USA)
SO Journal of Vacuum Science & Technology B (Microelectronics Processing and Phenomena) (May-June 1993) vol.11, no.3, p.581-6. 27 refs.
Price: CCCC 0734-211X/93/030581-06$01.00
CODEN: JVTBD9 ISSN: 0734-211X
DT Journal
TC Experimental
CY United States
LA English
AB The lateral distribution of focused- ***ion*** -beam ***implanted*** ***Si*** and Be atoms has been studied by measuring the electrical resistivity in ***grating*** structures. The ***gratings*** which were oriented perpendicular to the direction of the current flow were implanted with ***silicon*** and beryllium at 280 and 260 keV, respectively. They were implanted into semi-insulating materials cut on and off axis, and then rapid thermal annealed. The lateral straggle was found to be less than 100 nm for ***Si*** and equal to 190 nm for the Be implants. The standard deviation of the lateral distribution was found to increase with the dose. This is attributed to a concentration-dependent diffusion which results in an anomalously high diffusion coefficient. Comparison of the experimental parameters of the implanted distribution with values found in standard tables or calculated by a Monte Carlo TRIM code seems to indicate that all simulations overestimate the lateral straggle at the expense of the penetration depth.
CC A6170W Impurity concentration, distribution, and gradients; A6170T Doping and implantation of impurities; A6630J Diffusion, migration, and displacement of impurities; A6180M Channelling, blocking and energy loss of particles; A6170A Annealing processes; B2550B Semiconductor doping; B2520D II-VI and III-V semiconductors
CT ANNEALING; BERYLLIUM; DIFFUSION IN SOLIDS; DOPING PROFILES; ENERGY LOSS OF PARTICLES; FOCUSED ION BEAM TECHNOLOGY; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; RAPID THERMAL PROCESSING; ***SILICON***
ST III-V semiconductor; ***focused-ion beam implanted*** ; lateral distribution; electrical resistivity; ***grating structures*** ; semi-insulating materials; rapid thermal annealed; lateral straggle; concentration-dependent diffusion; anomalously high diffusion coefficient; Monte Carlo TRIM code; penetration depth; 280 keV; 260 keV; GaAs:Be; ***GaAs:Si***
CHI GaAs:Be int, GaAs int, As int, Be int, Ga int, GaAs:Be ss, As ss, Be ss, Ga ss, GaAs bin, As bin, Ga bin, Be el, Be dop; GaAs:Si int, GaAs int, As int, Ga int, Si int, GaAs:Si ss, As ss, Ga ss, Si ss, GaAs bin, As bin, Ga bin, Si el, Si dop

PHP electron volt energy 2.8E+05 eV; electron volt energy 2.6E+05 eV
ET Si; Be; As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; V; As*Be*Ga; As sy 3; sy 3; Be sy 3; Ga sy 3; GaAs:Be; Be doping; doped materials; As*Ga*Si; Si sy 3; GaAs:Si; Si doping; As; Ga

L7 ANSWER 160 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4414672 INSPEC DN A9313-8115H-029
TI Electron cyclotron resonance microwave discharge for oxide deposition using tetramethylcyclotetrasiloxane.
AU Pai, C.S.; Miner, J.F.; Foo, P.D. (AT&T Bell Labs., Murray Hill, NJ, USA)
SO Journal of Applied Physics (1 April 1993) vol.73, no.7, p.3531-8. 22 refs.
Price: CCCC 0021-8979/93/073531-08$06.00
CODEN: JAPIAU ISSN: 0021-8979
DT Journal
TC Experimental
CY United States
LA English
AB Results of the dielectric oxide films deposited at 300 degrees C using tetramethylcyclotetrasiloxane/oxygen chemistry in a reactor with electron cyclotron resonance microwave discharge presented. The authors have found that quality oxide is deposited with an O2/tetramethylcyclotetrasiloxane flow-rate ratio of greater than 3. The properties of the deposited films are characterized by prism ***coupler*** , infrared spectroscopy, Auger electron spectroscopy, Rutherford backscattering spectrometry, and triangular voltage sweep measurements. The deposition rate using tetramethylcyclotetrasiloxane is found to be about four times higher than tetraethylorthosilicate under similar processing conditions. The authors have obtained oxide films with superior quality (both material and electrical properties) at a deposition rate of 5000 AA/min. The step coverage of oxide is found to be excellent when RF bias is applied on the substrate during the deposition. They have demonstrated that trenches with aspect ratios >1.50 can be filled without voids. Details of reaction chemistries for oxide deposition in the electron cyclotron resonance reactor and the effect of ***ion*** ***bombardment*** on the oxide profile are discussed.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7865J Nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A7920N Atom, molecule, and ion impact
CT AUGER EFFECT; DIELECTRIC THIN FILMS; INFRARED SPECTRA OF INORGANIC SOLIDS; PLASMA CVD; RUTHERFORD BACKSCATTERING; ***SILICON*** COMPOUNDS
ST ECR microwave deposition; CVD; oxide deposition; tetramethylcyclotetrasiloxane; dielectric oxide films; flow-rate; infrared spectroscopy; Auger electron spectroscopy; Rutherford backscattering; triangular voltage sweep measurements; step coverage; ***ion*** *** bombardment*** ; SiOx
CHI SiO bin, Si bin, O bin
ET C; O2; O*Si; SiOx; Si cp; cp; O cp; SiO; Si; O

L7 ANSWER 161 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4411552 INSPEC DN A9313-0760P-003; B9307-4360-002
TI Laser stimulated scattering microscope: a tool for investigating modified metallic surfaces.
AU Harata, A.; Nishimura, H.; Tanaka, T.; Sawada, T. (Dept. of Ind. Chem., Tokyo Univ., Japan)
SO Review of Scientific Instruments (March 1993) vol.64, no.3, p.618-22. 23 refs.
Price: CCCC 0034-6748/93/030618-05$06.00
CODEN: RSINAK ISSN: 0034-6748
DT Journal
TC Experimental
CY United States
LA English
AB An instrument, based on the principle of microscopic measurements using transient reflecting ***gratings*** , has been built for investigation of modified metallic surfaces. After holographic illumination of focused light pulses of short duration, dynamic processes are observed by detecting the reflecting diffraction of the synchronously delayed probe pulse, while the sample is two-dimensionally scanned. Distribution imaging and relaxation time (or diffusivity) imaging are demonstrated for ***ion*** - ***implanted*** ***silicon*** wafers.
CC A0760P Optical microscopy; A6820 Solid surface structure; A4265C Stimulated Raman scattering and spectra; CARS; stimulated Brillouin and

stimulated Rayleigh scattering and spectra; A4260K Laser beam applications; A4240M Applications; B4360 Laser applications; B4350 Holography
CT DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; HOLOGRAPHY; MEASUREMENT BY LASER BEAM; MICROSCOPES; ***SILICON*** ; STIMULATED SCATTERING; SURFACE STRUCTURE
ST ***ion implanted wafers*** ; distribution imaging; 2D scanning; laser stimulated scattering microscope; modified metallic surfaces; microscopic measurements; ***transient reflecting gratings*** ; holographic illumination; focused light pulses; dynamic processes; reflecting diffraction; synchronously delayed probe pulse; relaxation time; diffusivity; ***Si***
CHI Si int, Si el
ET D; Si

L7 ANSWER 162 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4354891 INSPEC DN B9304-2560S-011
TI Submicrometre ***silicon*** permeable base transistors with buried CoSi2 gates.
AU Schuppen, A.; Vescan, L.; Marso, M.; Hart, A.v.d.; Luth, H. (Inst. fur Schicht und Ionentechnik, Forschungszentrum Julich, Germany); Beneking, H.
SO Electronics Letters (21 Jan. 1993) vol.29, no.2, p.215-17. 8 refs.
Price: CCCC 0013-5194/93/$7.50+0.00
CODEN: ELLEAK ISSN: 0013-5194
DT Journal
TC Practical; Theoretical
CY United Kingdom
LA English
AB ***Silicon*** permeable base transistors (PBTs) with monocrystalline buried CoSi2 gates have been fabricated by local high dose cobalt ***ion*** ***implantation*** through a grid-like mask into epitaxial ***Si*** (100) layers and homoepitaxial ***Si*** overgrowth by low-pressure vapour phase epitaxy. The PBTs show good DC characteristics and pinchoff at zero or at low negative gate voltages, respectively. Transistors with a ***grating*** periodicity of 0.6 mu m reach a maximum transconductance gm of 70 mS/mm. The highest obtained transit frequency is fT=6 GHz.
CC B2560S Other field effect devices; B2560B Modelling and equivalent circuits; B2550B Semiconductor doping; B0510D Epitaxial growth
CT COBALT COMPOUNDS; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; SCHOTTKY GATE FIELD EFFECT TRANSISTORS; SEMICONDUCTOR DEVICE MODELS; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; ***SILICON*** ; VAPOUR PHASE EPITAXIAL GROWTH
ST permeable base transistors; ***ion implantation*** ; grid-like mask; low-pressure vapour phase epitaxy; DC characteristics; pinchoff; negative gate voltages; ***grating periodicity*** ; maximum transconductance; transit frequency; ***Si-CoSi2***
CHI Si-CoSi2 int, CoSi2 int, Si2 int, Co int, Si int, CoSi2 bin, Si2 bin, Co bin, Si bin, Si el
ET Co*Si; Co sy 2; sy 2; Si sy 2; CoSi2; Co cp; cp; Si cp; Si; Si-CoSi2; CoSi; Si-CoSi; Co

L7 ANSWER 163 OF 187 INSPEC (C) 2006 IEE on STN
AN 1993:4328808 INSPEC DN A9305-7820D-002
TI Refractive-index changes in fused silica produced by heavy- ***ion*** ***implantation*** followed by photobleaching.
AU Albert, J.; Malo, B.; Hill, K.O.; Johnson, D.C. (Commun. Res. Center, Ottawa, Ont., Canada); Brebner, J.L.; Leonelli, R.
SO Optics Letters (1 Dec. 1992) vol.17, no.23, p.1652-4. 14 refs.
Price: CCCC 0146-9592/92/231652-03$5.00/0
CODEN: OPLEDP ISSN: 0146-9592
DT Journal
TC Experimental
CY United States
LA English
AB The changes in refractive index, optical absorption, and volume of synthetic fused silica resulting from the ***implantation*** of germanium and ***silicon*** ***ions*** at energies of 3 and 5 MeV are reported. Implantation changes the density and generates ultraviolet color centers in the silica, which increases the refractive index at visible wavelengths by approximately 1%. Irradiation of the implanted samples with 249-nm light from a KrF excimer laser photobleaches the color

centers and reduces the index by more than 0.1%. Photobleaching is used to write a 4.3- mu m pitch diffraction ***grating*** in the implanted silica.
CC A7820D Optical constants and parameters; A7840H Other nonmetals; A7850E Insulators; A4265G Optical transient phenomena, self-induced transparency, optical saturation and related effects; A6170D Colour centres; A4270G Light-sensitive materials; A4280F Gratings, echelles; A6170T Doping and implantation of impurities; A6180J Ions
CT COLOUR CENTRES; DENSITY OF SOLIDS; DIFFRACTION ***GRATINGS*** ; IMPURITY AND DEFECT ABSORPTION SPECTRA OF INORGANIC SOLIDS; ION BEAM EFFECTS; ***ION*** ***IMPLANTATION*** ; OPTICAL SATURABLE ABSORPTION; REFRACTIVE INDEX; ***SILICON*** COMPOUNDS; ULTRAVIOLET SPECTRA OF INORGANIC SOLIDS; VISIBLE SPECTRA OF INORGANIC SOLIDS
ST refractive index changes; photosensitivity; fused silica; ***heavy-ion*** *** implantation*** ; photobleaching; optical absorption; volume; density; ultraviolet color centers; visible wavelengths; ***diffraction*** *** grating*** ; 3 MeV; 5 MeV; 249 nm; KrF excimer laser; ***SiO2:Si*** ; SiO2:Ge
CHI SiO2:Si bin, SiO2 bin, O2 bin, Si bin, O bin, Si el, Si dop; SiO2:Ge ss, SiO2 ss, Ge ss, O2 ss, Si ss, O ss, SiO2 bin, O2 bin, Si bin, O bin, Ge el, Ge dop; KrF bin, Kr bin, F bin
PHP electron volt energy 3.0E+06 eV; electron volt energy 5.0E+06 eV; wavelength 2.49E-07 m
ET F*Kr; KrF; Kr cp; cp; F cp; O*Si; O sy 2; sy 2; Si sy 2; SiO2:Si; Si doping; doped materials; Si cp; O cp; Ge*O*Si; Ge sy 3; sy 3; O sy 3; Si sy 3; SiO2:Ge; Ge doping; SiO; Si; O; Ge; Kr

L7 ANSWER 164 OF 187 INSPEC (C) 2006 IEE on STN
AN 1992:4271571 INSPEC DN A9224-6825-003
TI Application of laser-induced GHz surface acoustic waves to evaluate ***ion*** - ***implanted*** semiconductors.
AU Nishimura, H.; Harata, A.; Sawada, T. (Dept. of Ind. Chem., Fac. of Eng., Tokyo Univ., Japan)
SO Japanese Journal of Applied Physics, Supplement (1992) vol.31, suppl.31-1, p.91-3. 10 refs.
CODEN: JJPYA5 ISSN: 0021-4922
Conference: 12th Symposium on Ultrasonic Electronics. Tokyo, Japan, 2-4 Dec 1991
Sponsor(s): Japan Soc. Appl. Phys
DT Conference Article; Journal
TC Experimental
CY Japan
LA English
AB The transient reflecting ***grating*** method has been used to characterize ***ion*** - ***implanted*** ***silicon*** layers and demonstrate its usefulness for nondestructive and remote evaluation of modified solid surfaces. The surface acoustic velocity, relaxation constant and signal intensity were measured as functions of ion dose. The results suggested that damage induced by implantation significantly affected the surface properties even under light dose conditions. The subnanosecond temporal resolution of the present method provided successful characterization of the implanted layers.
CC A6825 Mechanical and acoustical properties of solid surfaces and interfaces; A6180B Ultraviolet, visible and infrared radiation; A6170T Doping and implantation of impurities; A6180J Ions; A7840F Tetrahedrally bonded nonmetals; A4280F Gratings, echelles
CT DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; LASER BEAM EFFECTS; REFLECTIVITY; ***SILICON*** ; SURFACE ACOUSTIC WAVES
ST ***ion-implanted Si layers*** ; semiconductor; nondestructive evaluation; laser-induced GHz surface acoustic waves; ***transient*** *** reflecting grating method*** ; remote evaluation; modified solid surfaces; relaxation constant; signal intensity; ion dose; damage; surface properties; subnanosecond temporal resolution; implanted layers
ET Si

L7 ANSWER 165 OF 187 INSPEC (C) 2006 IEE on STN
AN 1991:4016823 INSPEC DN A91148117; B91077855
TI Fabrication and characteristics of GaAs-AlGaAs tunable laser diodes with DBR and phase-control sections integrated by compositional disordering of a quantum well.
AU Hirata, T.; Maeda, M.; Suehiro, M.; Hosomatsu, H. (Opt. Meas. Technol.

Dev. Co. Ltd., Tokyo, Japan)
SO IEEE Journal of Quantum Electronics (June 1991) vol.27, no.6, p.1609-15. 38 refs.
Price: CCCC 0018-9197/91/0600-1609$01.00
CODEN: IEJQA7 ISSN: 0018-9197
DT Journal
TC Practical; Experimental
CY United States
LA English
AB GaAs-AlGaAs rib-waveguide graded-index separate-confinement heterostructure (GRINSCH) single-quantum-well (SQW) tunable distributed Bragg reflector (DBR) laser diodes were fabricated by EB lithography, ***ion*** ***implantation*** , and two-step metalorganic vapor phase epitaxy (MOVPE) growth. Active and passive waveguides were monolithically integrated by the compositional disordering of quantum-well heterostructures using ***silicon*** ***ion*** ***implantation*** . First-order ***gratings*** and rib waveguides were adopted with EB lithography to improve lasing characteristics, and they have wide application to photonic integrated circuits (PICs). Waveguide losses of partially disordered GRINSCH-SQW passive waveguides were as low as 4.4 cm-1 at the lasing wavelength. A narrow linewidth as low as 560 kHz and a frequency tuning of more than 2.9 THz were obtained. The results show that this fabrication process is useful for PICs.
CC A4260B Design of specific laser systems; A4255P Lasing action in semiconductors with junctions; A4282 Integrated optics; A4260F Laser beam modulation, pulsing and switching; mode locking and tuning; B4320J Semiconductor junction lasers; B4140 Integrated optics
CT ALUMINIUM COMPOUNDS; DIFFRACTION ***GRATINGS*** ; DISTRIBUTED BRAGG REFLECTOR LASERS; ELECTRON BEAM LITHOGRAPHY; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; LASER TUNING; OPTICAL LOSSES; SEMICONDUCTOR GROWTH; SEMICONDUCTOR JUNCTION LASERS; VAPOUR PHASE EPITAXIAL GROWTH
ST III-V semiconductor; two step MOVPE; fabrication; electron beam lithography; quantum well compositional disordering; rib waveguide GRINSCH SQW LD; active waveguides; monolithic integration; ***Si ion*** *** implantation*** ; ***first order gratings*** ; GaAs-AlGaAs tunable laser diodes; DBR; phase-control sections; ***ion implantation*** ; passive waveguides; lasing characteristics; photonic integrated circuits; losses; narrow linewidth; frequency tuning; GaAs-AlGaAs; ***GaAs:Si-AlGaAs***
CHI GaAs:Si-AlGaAs int, GaAs:Si int, AlGaAs int, GaAs int, Al int, As int, Ga int, Si int, GaAs:Si ss, AlGaAs ss, Al ss, As ss, Ga ss, Si ss, GaAs bin, As bin, Ga bin, Si el, Si dop; GaAs-AlGaAs int, AlGaAs int, GaAs int, Al int, As int, Ga int, AlGaAs ss, Al ss, As ss, Ga ss, GaAs bin, As bin, Ga bin
ET Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; GaAs; Ga cp; cp; As cp; AlGaAs; Al cp; GaAs-AlGaAs; Cs*I*P; PICs; P cp; I cp; Cs cp; V; Si; Al*As*Ga*Si; Al sy 4; sy 4; As sy 4; Ga sy 4; Si sy 4; GaAs:Si; Si doping; doped materials; GaAs:Si-AlGaAs; As*Ga*Si; Si sy 3; As*Ga; As sy 2; sy 2; Ga sy 2; Al; As; Ga

L7 ANSWER 166 OF 187 INSPEC (C) 2006 IEE on STN
AN 1991:3928933 INSPEC DN A91095945
TI Novel microscopy using stimulated light scattering by laser-induced transient reflecting ***gratings*** on metallic surfaces.
AU Harata, A.; Sawada, T. (Dept. of Ind. Chem., Tokyo Univ., Japan)
SO Applied Physics Letters (29 April 1991) vol.58, no.17, p.1839-41. 15 refs.
Price: CCCC 0003-6951/91/171839-03$02.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB A novel microscopic method, based on the technique of laser-induced transient reflecting ***gratings*** , is proposed to monitor ***ion*** ***implantation*** in ***silicon*** by noncontact and nondestructive ways. Some unique advantages of this technique, such as high sensitivity to ion dose and potential real time imaging capability, are demonstrated.
CC A0760P Optical microscopy; A6170T Doping and implantation of impurities
CT ARGON; DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; LIGHT SCATTERING; OPTICAL MICROSCOPY;

SILICON ; STIMULATED SCATTERING
ST microscopy; semiconductor; nondestructive study; stimulated light scattering; metallic surfaces; ***laser-induced transient reflecting*** *** gratings*** ; ***ion implantation*** ; ion dose; real time imaging capability; ***Si:Ar***
CHI Si:Ar sur, Ar sur, Si sur, Si:Ar bin, Ar bin, Si bin, Ar el, Si el, Ar dop
ET Ar*Si; Si:Ar; Ar doping; doped materials; Ar; Si

L7 ANSWER 167 OF 187 INSPEC (C) 2006 IEE on STN
AN 1991:3789489 INSPEC DN B91002017
TI A permeable base transistor on ***Si*** (100) with implanted COSi2-gate.
AU Schuppen, A.; Mantl, S.; Vescan, L.; Luth, H. (Inst. fur Schicht- und Ionentech., Julich, West Germany)
SO ESSDERC 90. 20th European Solid State Device Research Conference
Editor(s): Eccleston, W.; Rosser, P.J.
Bristol, UK: Adam Hilger, 1990. p.45-8 of xxix+637 pp. 10 refs.
Conference: Nottingham, UK, 10-13 Sept 1990
Sponsor(s): IEE; IEEE; EPS
ISBN: 0-7503-0065-5
DT Conference Article
TC New Development; Practical; Experimental
CY United Kingdom
LA English
AB A permeable base transistor (PBT) has been fabricated by local implantation of 59Co into ***Si*** (100) with subsequent rapid thermal annealing and epitaxial growth of ***silicon*** by LPVPE. Transmission electron microscopy shows abrupt interfaces between the buried CoSi2 and the adjacent ***silicon*** . Rutherford backscattering and channeling experiments with a minimum yield of 5.3% for the Co signal as well as a specific resistance of 13 mu ohmcm of the CoSi2 layers demonstrate the good quality of the ***Si*** /CoSi2/ ***Si*** heterostructure. ***Si*** /CoSi2 Schottky diodes revealed ideality factors of 1.01, while PBTs with 1.5 mu m ***gratings*** exhibited a maximum transconductance of 11 mS/mm.
CC B2560J Bipolar transistors; B2550B Semiconductor doping; B2550F Metallisation
CT BIPOLAR TRANSISTORS; COBALT COMPOUNDS; ***ION*** ***IMPLANTATION*** ; METALLISATION; SEMICONDUCTOR TECHNOLOGY
ST ***ion implantation*** ; silicides; permeable base transistor; implanted COSi2-gate; PBT; rapid thermal annealing; epitaxial growth; LPVPE; abrupt interfaces; Rutherford backscattering; channeling experiments; specific resistance; heterostructure; Schottky diodes; ideality factors; transconductance; 13 muohmcm; 1.5 micron; 59Co; ***CoSi2-Si***
CHI CoSi2-Si int, CoSi2 int, Si2 int, Co int, Si int, CoSi2 bin, Si2 bin, Co bin, Si bin, Si el; Co el
PHP resistivity 1.3E-07 ohmm; size 1.5E-06 m
ET Si; C*O*Si; COSi2; C cp; cp; O cp; Si cp; Co; 59Co; is; Co is; Co*Si; Co sy 2; sy 2; Si sy 2; CoSi2; Co cp; CoSi2-Si; CoSi

L7 ANSWER 168 OF 187 INSPEC (C) 2006 IEE on STN
AN 1990:3747501 INSPEC DN A90147770
TI Formation of surface inversion layer in F+-implanted n-type ***silicon*** .
AU Chu, C.H.; Chen, L.J. (Dept. of Mater. Sci. & Eng., National Tsing Hua Univ., Hsinchu, Taiwan); Hwang, H.L.
SO Journal of Crystal Growth (June 1990) vol.103, no.1-4, p.188-96. 24 refs.
Price: CCCC 0022-0248/90/$03.50
CODEN: JCRGAE ISSN: 0022-0248
Conference: 3rd International Symposium on Defect Recognition and Image Processing in III-V Compounds (DRIP-III). Tokyo, Japan, 22-25 Sept 1989
DT Conference Article; Journal
TC Experimental
CY Netherlands
LA English
AB Influences of fluorine ***ion*** ***implantation*** on the electrical properties of n-type ***silicon*** have been investigated by electron beam induced current (EBIC), Hall and metal-oxide-semiconductor (MOS) high frequency capacitance-voltage (HFCV) measurements. A ***grating*** mask was used to delineate the implantation region so that the F+-implanted and unirradiated areas were

located in the same Al/n-type ***Si*** Schottky diode region. EBIC images, obtained with different electron beam energies, normal and parallel to the diode surface, and EBIC collection efficiencies in the implanted and unirradiated areas were recorded. Fitting data of energy dependent EBIC collection efficiency into the theoretical EBIC model of Schottky diode, the thickness of the metal layer, depletion layer width, minority carrier diffusion length in the substrate and EBIC collection efficiency in the deletion region were determined. The minority carrier recombination in the fluorine implanted area was found to be higher than that of the blank ***Si*** area under Schottky contact. Outside the Schottky contact, an inversion layer was observed to form at the surface of the implanted area. The structural perfection of the F+ implanted area was investigated by cross-sectional transmission electron microscopy (XTEM). The p-type characterization in the surface layer of the F+ implanted area was also confirmed by the Hall and HFCV measurements.
CC A7320H Impurity and defect levels; energy levels of adsorbed species; A6170T Doping and implantation of impurities; A7220M Galvanomagnetic and other magnetotransport effects; A7220H High-field and nonlinear effects
CT EBIC; ELEMENTAL SEMICONDUCTORS; FLUORINE; HALL EFFECT; INVERSION LAYERS; ***ION*** ***IMPLANTATION*** ; ***SILICON*** ; SURFACE ELECTRON STATES
ST semiconductor; Hall effect; surface inversion layer; ***ion*** *** implantation*** ; electrical properties; electron beam induced current; high frequency capacitance-voltage; energy dependent EBIC collection efficiency; Schottky diode; thickness; metal layer; depletion layer width; minority carrier diffusion length; minority carrier recombination; cross-sectional transmission electron microscopy; ***Si:F+***
CHI Si:F bin, Si bin, F bin, Si el, F el, F dop
ET F; F+; F ip 1; ip 1; Al; Si; F*Si; Si:F; Si:F+; F+ doping; doped materials; F doping

L7 ANSWER 169 OF 187 INSPEC (C) 2006 IEE on STN
AN 1990:3535787 INSPEC DN A90019229; B90008944
TI A novel GRIN-SCH-SQW laser diode monolithically integrated with low-loss passive waveguides.
AU Hirata, T.; Maeda, M.; Hosomatsu, H. (Optical Measur. Technol. Dev. Co. Ltd., Central Res. Lab., Tokyo, Japan)
SO Japanese Journal of Applied Physics, Part 2 (Letters) (1989) vol.28, no.8, p.L1429-32
CODEN: JAPLD8 ISSN: 0021-4922
DT Journal
TC New Development; Experimental
CY Japan
LA English
AB The authors propose a novel fabrication process for monolithic multielement laser diodes and demonstrate the performance of a monolithically integrated passive waveguide laser as compared with a conventional laser fabricated under the same procedures. This process, which is based on ***silicon*** ***ion*** ***implantation*** and two-step MOVPE growth, is suitable for integrating optical elements like ***gratings*** and rib waveguides. They also demonstrate that the COD level of the window structure laser fabricated by this process is more than 1.3W in pulsed operation.
CC A4260B Design of specific laser systems; A4255P Lasing action in semiconductors with junctions; A4282 Integrated optics; A4280L Optical waveguides and couplers; A4285D Surface grinding, fabrication; A4280R Gradient-index (GRIN) devices; B4320J Semiconductor junction lasers; B4140 Integrated optics; B4130 Optical waveguides
CT GRADIENT INDEX OPTICS; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; OPTICAL WAVEGUIDES; OPTICAL WORKSHOP TECHNIQUES; SEMICONDUCTOR JUNCTION LASERS; VAPOUR PHASE EPITAXIAL GROWTH
ST GRIN-SCH-SQW laser diode; fabrication; monolithic multielement laser diodes; integrated passive waveguide laser; ***ion implantation*** ; MOVPE growth; optical elements; ***gratings*** ; rib waveguides; COD; window structure laser; pulsed operation; 1.3 W; ***Si+***
CHI Si el
PHP power 1.3E+00 W
ET W; Si; Si+; Si ip 1; ip 1

L7 ANSWER 170 OF 187 INSPEC (C) 2006 IEE on STN
AN 1989:3425310 INSPEC DN A89094308
TI Study of carrier dynamics and radiation defects in ***ion*** -

implanted   ***silicon*** by transient ***grating***
techniques.
AU Jonikas, L.; Jarasiunas, K.; Vaitkus, J. (V. Kapsukas State Univ.,
Vilnius, Lithuanian SSR, USSR)
SO Physica Status Solidi A (16 March 1989) vol.112, no.1, p.375-80. 11 refs.
CODEN: PSSABA ISSN: 0031-8965
Conference: International Conference on Ion Implantation in Semiconductors
and Other Materials. Lublin, Poland, 12-17 Sept 1988
DT Conference Article; Journal
TC Experimental
CY German Democratic Republic
LA English
AB Investigations of photoelectrical properties of ***ion*** -
implanted   ***Si*** are performed by the optical transient
grating technique. A lowering of carrier and thermal diffusion as
well as faster recombination are observed. The existence of electrically
active radiation defects in a region essentially exceeding the projected
mean range of ions is proved by measurements of both light diffraction and
photoconductivity.
CC A7220J Charge carriers: generation, recombination, lifetime, and trapping;
A7280C Elemental semiconductors; A6180J Ions; A7240 Photoconduction and
photovoltaic effects; photodielectric effects; A6170T Doping and
implantation of impurities
CT CRYSTAL DEFECTS; ELECTRON-HOLE RECOMBINATION; ELEMENTAL SEMICONDUCTORS;
ION   ***IMPLANTATION*** ; LIGHT DIFFRACTION; PHOTOCONDUCTIVITY;
SILICON
ST semiconductor; carrier diffusion; carrier dynamics; radiation defects;
transient grating techniques ; photoelectrical properties;
ion-implanted Si ; ***optical transient grating technique*** ;
thermal diffusion; recombination; electrically active radiation defects;
light diffraction; photoconductivity; ***Si***
CHI Si el
ET Si

L7 ANSWER 171 OF 187 INSPEC (C) 2006 IEE on STN
AN 1989:3379467 INSPEC   DN A89065097
TI Picosecond relaxation of surface dynamic ***gratings*** in implanted
and pulse-annealed ***silicon*** crystals.
AU Baltrameyunas, R.; Gashka, R.; Kuokshtis, E.; Nyatikshis, V.; Pyatrauskas,
M. (V. Kapsukas Lithuanian State Univ., Vilnius, Lithuanian SSR, USSR)
SO Soviet Physics - Semiconductors (Aug. 1988) vol.22, no.8, p.900-3. 14
refs.
Price: CCCC 0038-5700/88/080900-04$03.90
CODEN: SPSEAX ISSN: 0038-5700
Translation of: Fizika i Tekhnika Poluprovodnikov (Aug. 1988) vol.22,
no.8, p.1422-7. 14 refs.
CODEN: FTPPA4 ISSN: 0015-3222
DT Journal; Translation Abstracted
TC Experimental
CY USSR; United States
LA English
AB An investigation was made of picosecond diffraction ***gratings*** in
silicon crystals subjected to ***ion*** - ***implantation***
doping and subsequent recrystallization using laser annealing
pulses. The decay of the dynamic ***gratings*** induced on the surface
of a semiconductor by interfering beams from a picosecond laser was
investigated by a probe method. A theoretical analysis was made of the
diffraction efficiency allowing for modulation of the refractive index
under the influence of laser radiation and for processes involving
recombination of nonequilibrium carriers in the surface region of a
crystal. The results of the calculations were compared with the
experimental data.
CC A4280F Gratings, echelles; A6170T Doping and implantation of impurities;
A8140G Other heat and thermomechanical treatments; A7820D Optical
constants and parameters
CT ANNEALING; DIFFRACTION ***GRATINGS*** ; ELECTRON-HOLE RECOMBINATION;
ELEMENTAL SEMICONDUCTORS; ***ION***   ***IMPLANTATION*** ; REFRACTIVE
INDEX; ***SILICON***
ST carrier recombination; ***surface dynamic gratings*** ; ***picosecond***
***   diffraction gratings*** ; ***ion-implantation*** ; laser annealing
pulses; semiconductor; refractive index; ***Si***
CHI Si sur, Si el

ET   Si

L7   ANSWER 172 OF 187 INSPEC (C) 2006 IEE on STN
AN   1989:3369592 INSPEC   DN A89060243
TI   Transient ***gratings*** in metrology of semiconductor parameters and
      optoelectronic devices.
AU   Jarasiunas, K.; Vaitkus, J. (Dept. of Phys., Vilnius State Univ., USSR)
SO   Physica Status Solidi B (1 Dec. 1988) vol.150, no.2, p.879-84. 26 refs.
      CODEN: PSSBBD ISSN: 0370-1972
      Conference: International Conference on Optical Nonlinearities and
      Bistability of Semiconductors. Berlin, East Germany, 22-26 Aug 1988
DT   Conference Article; Journal
TC   Experimental
CY   German Democratic Republic
LA   English
AB   The origin of optical nonlinearity and its magnitude is investigated in
      different semiconductors and structures, as CdSe, GaAs, InSb, ***Si***
      (pure, ***ion*** - ***implanted*** , heavily ***doped*** or
      amorphous), MQWS. The usefulness of the transient ***grating***
      technique is shown to study peculiarities of the nonequilibrium processes
      in strong electric fields, at high excitation levels or to reveal the
      presence and transformation of defects. Some novel possibilities for the
      deflection of a laser beam and its modulation are demonstrated.
CC   A4280F Gratings, echelles; A4280K Optical beam modulators; A7820J
      Electro-optical effects; A4265 Nonlinear optics
CT   CRYSTAL DEFECTS; DIFFRACTION ***GRATINGS*** ; ELECTRO-OPTICAL EFFECTS;
      NONLINEAR OPTICS; OPTICAL MODULATION; SEMICONDUCTOR QUANTUM WELLS;
      SEMICONDUCTORS
ST   defect transformation; laser beam modulation; multiple quantum wells;
      laser beam deflection; metrology; semiconductor parameters; optoelectronic
      devices; optical nonlinearity; MQWS; ***transient grating technique***
      ; nonequilibrium processes; strong electric fields; high excitation
      levels; CdSe; GaAs; InSb; ***Si***
CHI   Si el; CdSe bin, Cd bin, Se bin; GaAs bin, As bin, Ga bin; InSb bin, In
      bin, Sb bin
ET   Cd*Se; Cd sy 2; sy 2; Se sy 2; CdSe; Cd cp; cp; Se cp; As*Ga; As sy 2; Ga
      sy 2; GaAs; Ga cp; As cp; In*Sb; In sy 2; Sb sy 2; InSb; In cp; Sb cp; Si;
      Cd; Se; As; Ga; In; Sb

L7   ANSWER 173 OF 187 INSPEC (C) 2006 IEE on STN
AN   1989:3369574 INSPEC   DN A89062008
TI   Reflectivity and dynamic ***gratings*** in implanted ***Si***
      induced by picosecond laser pulses.
AU   Galeckas, A.; Netiksis, V.; Petrauskas, M.; Vaitkus, J. (Vilnius State
      Univ., USSR)
SO   Physica Status Solidi B (1 Dec. 1988) vol.150, no.2, p.743-8. 13 refs.
      CODEN: PSSBBD ISSN: 0370-1972
      Conference: International Conference on Optical Nonlinearities and
      Bistability of Semiconductors. Berlin, East Germany, 22-26 Aug 1988
DT   Conference Article; Journal
TC   Experimental
CY   German Democratic Republic
LA   English
AB   The relaxation processes are investigated in high-excited ***ion*** -
        implanted   ***silicon*** using transient-reflectivity and
      dynamic ***grating*** methods in the picosecond time domain. The
      dependences of the optical parameters of ***ion*** - ***implanted***
        Si versus ***implantation*** does are presented. The temporal
      behaviour of the non-equilibrium charge carriers obtained from the
      induced-reflectivity change and ***grating*** decay measurements is
      analysed. The reflectivity decay process is found to be always faster than
      the corresponding ***grating*** decay process. By the numerical
      calculations the surface recombination velocity is estimated to S=4*104
      cm/s. The influence of the implantation process on the effective carrier
      lifetime is discussed.
CC   A7847 Time-resolved optical spectroscopies and other ultrafast optical
      measurements in condensed matter; A7220J Charge carriers: generation,
      recombination, lifetime, and trapping; A7280C Elemental semiconductors;
      A6170T Doping and implantation of impurities; A7820W Other optical
      properties of bulk materials
CT   BORON; CARRIER LIFETIME; ELEMENTAL SEMICONDUCTORS; ***ION***
        IMPLANTATION ; PHOSPHORUS; REFLECTIVITY; ***SILICON*** ; TIME

RESOLVED SPECTRA
ST semiconductor; ***ion implantation*** ; nonequilibrium charge carriers; picosecond laser pulses; transient-reflectivity; ***dynamic grating*** ; carrier lifetime; ***Si:B*** ; ***Si:P***
CHI Si:B bin, Si bin, B bin, Si el, B el, B dop; Si:P bin, Si bin, P bin, Si el, P el, P dop
ET Si; B*Si; Si:B; B doping; doped materials; P*Si; Si:P; P doping; P

L7 ANSWER 174 OF 187 INSPEC (C) 2006 IEE on STN
AN 1988:3235669 INSPEC DN A88128391; B88065354
TI Fabrication of index-guided AlGaAs multiquantum well lasers and ***grating*** structures by ***Si*** -induced disordering.
AU Nakashima, H. (Inst. of Sci. & Ind. Res., Osaka Univ., Japan); Ishida, K.
SO Optoelectronics - Devices and Technologies (Dec. 1987) vol.2, no.2, p.235-45. 24 refs.
CODEN: ODTEEG ISSN: 0912-5434
DT Journal
TC Experimental
CY Japan
LA English
AB The authors review the application of compositional disordering of MQW to the fabrication of transverse mode controlled AlGaAs MQW lasers and submicron ***grating*** structures using conventional and focused ***ion*** beam ***implantation*** technique. This simple, controllable and reliable technique is expected to be very useful for making optoelectronic integrated circuits.
CC A4255P Lasing action in semiconductors with junctions; A4280F Gratings, echelles; A4282 Integrated optics; A6170T Doping and implantation of impurities; B2530B Semiconductor junctions; B2550B Semiconductor doping; B4140 Integrated optics; B4320J Semiconductor junction lasers
CT ALUMINIUM COMPOUNDS; DIFFRACTION ***GRATINGS*** ; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; OPTICAL WORKSHOP TECHNIQUES; SEMICONDUCTOR JUNCTION LASERS; SEMICONDUCTOR SUPERLATTICES
ST multiquantum well lasers; ***grating structures*** ; compositional disordering; ***submicron grating structures*** ; ***focused ion beam*** *** implantation technique*** ; optoelectronic integrated circuits; AlGaAs
CHI AlGaAs int, Al int, As int, Ga int, AlGaAs ss, Al ss, As ss, Ga ss
ET Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; AlGaAs; Al cp; cp; Ga cp; As cp; Si; V; Al; As; Ga

L7 ANSWER 175 OF 187 INSPEC (C) 2006 IEE on STN
AN 1988:3229356 INSPEC DN A88128154; B88065666
TI GaAs/GaAlAs distributed Bragg reflector laser with a focused ***ion*** beam, low dose ***dopant*** ***implanted*** ***grating*** .
AU Wu, M.C.; Boenke, M.M.; Wang, S. (Dept. of Electr. Eng. & Comput. Sci., California Univ., Berkeley, CA, USA); Clark, W.M., Jr.; Stevens, E.H.; Utlaut, M.W.
SO Applied Physics Letters (25 July 1988) vol.53, no.4, p.265-7. 17 refs.
Price: CCCC 0003-6951/88/300265-03$01.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB The authors report, for the first time, the performance of a GaAs/GaAlAs distributed Bragg reflector (DBR) laser using a focused ***ion*** beam ***implanted*** ***grating*** (FIB-DBR). Stripes of ***Si*** ++ with a period of 2300 AA and a dose approximately 1014 cm-2 are directly implanted into the passive large optical cavity layer to provide the distributed feedback. Surface-emitting light from the second-order ***grating*** is observed. Threshold current of 110 mA and single DBR mode operation from 20 to 40 degrees C are obtained. The wavelength tuning rate with temperature is 0.8 AA/ degrees C. The coupling coefficient is estimated to be 15 cm-1. The results show that FIB technology is practical for distributed feedback and DBR lasers and optoelectronic integrated circuits.
CC A4255P Lasing action in semiconductors with junctions; B4320J Semiconductor junction lasers
CT ALUMINIUM COMPOUNDS; DISTRIBUTED FEEDBACK LASERS; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; LASER TUNING; SEMICONDUCTOR JUNCTION LASERS
ST semiconductor; threshold current; GaAs/GaAlAs distributed Bragg reflector

laser; focused ion beam; ***low dose dopant implanted grating*** ;
  Si++ ; passive large optical cavity layer; distributed feedback;
  second-order grating ; single DBR mode operation; wavelength tuning
  rate; coupling coefficient; 110 mA; 20 to 40 degC; GaAs-GaAlAs
CHI GaAs-GaAlAs int, GaAlAs int, GaAs int, Al int, As int, Ga int, GaAlAs ss,
  Al ss, As ss, Ga ss, GaAs bin, As bin, Ga bin
PHP current 1.1E-01 A; temperature 2.93E+02 to 3.13E+02 K
ET As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; Al*As*Ga; Al sy 3;
  sy 3; As sy 3; Ga sy 3; GaAlAs; Al cp; Si; Si++; Si ip 1; ip 1; C; V;
  GaAs-GaAlAs; Al; As; Ga

L7 ANSWER 176 OF 187 INSPEC (C) 2006 IEE on STN
AN 1988:3039545 INSPEC DN A88007477
TI Time-resolved and post-irradiation studies of the interaction of
  high-power pulsed microwave radiation with ***silicon*** .
AU James, R.B. (Sandia Nat. Lab., Livermore, CA, USA); Bolton, P.R.; Alvarez,
  R.A.; Valiga, R.E.; Christie, W.H.
SO Beam-Solid Interactions and Transient Processes Symposium
  Editor(s): Thompson, M.O.; Picraux, S.T.; Williams, J.S.
  Pittsburgh, PA, USA: Mater. Res. Soc, 1987. p.153-8 of xxi+750 pp. 3 refs.
  Conference: Boston, MA, USA, 1-4 Dec 1986
  ISBN: 0-931837-40-5
DT Conference Article
TC Experimental
CY United States
LA English
AB The authors have measured the microwave-induced damage to the near-surface
  region of ***silicon*** for 1.9- mu s pulses at a frequency of 2.856
  GHz and a pulse power of up to 7.2 MW. Rectangular samples were irradiated
  in a test section of WR-284 waveguide that was filled with freon to a
  pressure of 30 psig. Incident, transmitted and reflected powers were
  monitored with directional ***couplers*** and fast diodes. The results
  of the time-resolved optical measurements show that the onset of surface
  damage is accompanied by a large increase in the reflected power.
  Examination of the irradiated surfaces shows that the degree of damage is
  greatest near the edges of the samples. Using secondary ***ion*** mass
  spectrometry to profile the ***implanted*** As, they find that the
  microwave pulses can melt the near-surface region of the material for
  pulse powers exceeding a threshold value.
CC A6180 Radiation damage and other irradiation effects; A6180 Radiation
  damage and other irradiation effects; A7870G Microwave and radiofrequency
  interactions; A7920N Atom, molecule, and ion impact
CT ARSENIC; ELEMENTAL SEMICONDUCTORS; RADIATION EFFECTS; REFLECTIVITY;
  SECONDARY ION MASS SPECTRA; ***SILICON***
ST semiconductor; post-irradiation studies; high-power pulsed microwave
  radiation; microwave-induced damage; near-surface region; WR-284
  waveguide; freon; transmitted; reflected powers; ***directional***
  *** couplers*** ; fast diodes; time-resolved optical measurements; irradiated
  surfaces; secondary ion mass spectrometry; implanted As; melt;
  Si:As
CHI Si:As bin, As bin, Si bin, As el, Si el, As dop
ET As; As*Si; As sy 2; sy 2; Si sy 2; Si:As; As doping; doped materials; Si

L7 ANSWER 177 OF 187 INSPEC (C) 2006 IEE on STN
AN 1987:3019769 INSPEC DN B87077387
TI Microwave scanning microscopy for planar structure diagnostics.
AU Gutmann, R.J.; Borrego, J.M.; Chakrabarti, P.; Wang, M.-S. (Dept. of
  Electr., Comput. & Syst. Eng., Rensselaer Polytech. Inst., Troy, NY, USA)
SO 1987 IEEE MTT-S International Microwave Symposium Digest (Cat.
  No.87CH2395-2)
  New York, NY, USA: IEEE, 1987. p.281-4 vol.1 of 2 vol. v+1045 pp. 5 refs.
  Conference: Las Vegas, NV, USA, 9-11 June 1987
  Sponsor(s): IEEE
  Price: CCCC 0149-645X/87/0000-0281$01.00
DT Conference Article
TC Experimental
CY United States
LA English
AB The authors have utilized three different critically-coupled one-port
  cavities, with thin-diameter conducting coupling elements providing
  enhanced lateral sensitivity in microstrip and rectangular waveguide
  cavities and a circular aperture coupling element in a cylindrical

waveguide cavity providing enhanced depth-resolution capability. Lateral resolutions on the order of a few mils (0.002 wavelengths) and depth resolutions of a few micrometers (0.0001 wavelengths) have been achieved with conventional, low-power X-band instrumentation. Lateral resolution measurements of evaporated aluminum/ ***silicon*** ***gratings*** with sheet-conductance contrast of 300, ***ion*** - ***implanted*** n+/n ***silicon*** conductivity ***gratings*** with sheet-conductance contrast of 2 and dielectrically-isolated, single-crystal-tub ***silicon*** wafers are described. More limited depth profile measurements are presented to illustrate depth-resolution capability.

CC B0170E Production facilities and engineering; B1320 Waveguide components; B7310N Microwave techniques

CT CAVITY RESONATORS; INTEGRATED CIRCUIT TESTING; MICROSCOPY; MICROWAVE MEASUREMENT

ST single crystal tub wafers; semiconductor wafers; lateral conductivity variations; microwave scanning microscopy; planar structure diagnostics; critically-coupled; one-port cavities; enhanced lateral sensitivity; microstrip; rectangular waveguide cavities; circular aperture coupling element; cylindrical waveguide cavity; enhanced depth-resolution capability; low-power X-band instrumentation; depth profile measurements; ***Al-Si gratings***

CHI Al-Si int, Al int, Si int, Al el, Si el

ET Al*Si; Al sy 2; sy 2; Si sy 2; Al-Si; Al; Si

L7 ANSWER 178 OF 187 INSPEC (C) 2006 IEE on STN

AN 1987:2947276 INSPEC DN A87098718; B87053246

TI Fabrication of submicron ***grating*** patterns using compositional disordering of AlGaAs-GaAs superlattices by focused ***Si*** ***ion*** beam ***implantation*** .

AU Ishida, K.; Miyauchi, E.; Morita, T.; Takamori, T.; Fukunaga, T.; Hashimoto, H.; Nakashima, H. (Optoelectron. Joint Res. Lab., Kawasaki, Japan)

SO Japanese Journal of Applied Physics, Part 2 (Letters) (April 1987) vol.26, no.4, p.L285-7
CODEN: JAPLD8 ISSN: 0021-4922

DT Journal

TC Experimental

CY Japan

LA English

AB Submicron ***grating*** patterns (0.4 mu m period) were fabricated in AlGaAs-GaAs superlattices (SLs) using compositional disordering of SLs by focused ***Si*** ***ion*** beam ***implantation*** and subsequent annealing. The ***grating*** structure which is composed of preserved SL and mixed (disordered) regions was confirmed by scanning electron microscopic (SEM) and scanning Auger microscopic (SAM) observations.

CC A6170T Doping and implantation of impurities; A6848 Solid-solid interfaces; B2520D II-VI and III-V semiconductors; B2530B Semiconductor junctions; B2550B Semiconductor doping

CT ALUMINIUM COMPOUNDS; AUGER EFFECT; GALLIUM ARSENIDE; III-V SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ; SCANNING ELECTRON MICROSCOPE EXAMINATION OF MATERIALS; SEMICONDUCTOR SUPERLATTICES; ***SILICON***

ST semiconductor; fabrication; ***submicron grating*** ; compositional disordering; ***focused Si ion beam implantation*** ; annealing; scanning electron microscopic; scanning Auger microscopic; 0.4 micron; AlGaAs-GaAs superlattices; ***AlGaAs:Si***

CHI AlGaAs:Si int, AlGaAs int, Al int, As int, Ga int, Si int, AlGaAs:Si ss, AlGaAs ss, Al ss, As ss, Ga ss, Si ss, Si el, Si dop; AlGaAs-GaAs int, AlGaAs int, GaAs int, Al int, As int, Ga int, AlGaAs ss, Al ss, As ss, Ga ss, GaAs bin, As bin, Ga bin

PHP size 4.0E-07 m

ET Al*As*Ga; Al sy 3; sy 3; As sy 3; Ga sy 3; AlGaAs; Al cp; cp; Ga cp; As cp; GaAs; AlGaAs-GaAs; Si; V; Al*As*Ga*Si; Al sy 4; sy 4; As sy 4; Ga sy 4; Si sy 4; AlGaAs:Si; Si doping; doped materials; Al; As; Ga; As*Ga; As sy 2; sy 2; Ga sy 2

L7 ANSWER 179 OF 187 INSPEC (C) 2006 IEE on STN

AN 1987:2842417 INSPEC DN A87038385

TI Crystalline films on amorphous substrates by zone melting and surface-energy-driven grain growth in conjunction with patterning.

AU Smith, H.I. (Dept. of Electr. Eng. & Comput. Sci., MIT, Cambridge, MA,

USA); Geis, M.W.; Thompson, C.V.; Chen, C.K.
SO Semiconductor-on-Insulator and Thin Film Transistor Technology Symposium
Editor(s): Chiang, A.; Geis, M.W.; Pfeiffer, L.
Pittsburgh, PA, USA: Mater. Res. Soc, 1986. p.3-13 of xvii+474 pp. 30 refs.
Conference: Boston, MA, USA, 3-6 Dec 1985
Sponsor(s): Mater. Res. Soc
ISBN: 0-931837-18-9
DT Conference Article
TC General Review; Experimental
CY United States
LA English
AB Two approaches to preparing oriented crystalline films on amorphous substrates are reviewed briefly: zone-melting recrystallization (ZMR) and surface-energy-driven grain growth (SEDGG). In both approaches patterning can be employed either to establish orientation or to control the location of defects. ZMR has been highly successful for the growth of ***Si*** films on oxidized ***Si*** substrates, but its applicability is limited by the high temperatures required. SEDGG has been investigated as a potentially universal, low temperature approach. It has been demonstrated in ***Si*** , Ge, and Au. Surface ***gratings*** favor the growth of grains with a specific in-plane orientation. In order for SEDGG to be of broad practical value, the mobility of semiconductor grain boundaries must be increased substantially. Mobility enhancement has been achieved via ***doping*** and ***ion*** ***bombardment*** .
CC A0130R Reviews and tutorial papers; resource letters; A6170N Grain and twin boundaries; A6855 Thin film growth, structure, and epitaxy; A8115 Methods of thin film deposition
CT ELEMENTAL SEMICONDUCTORS; GERMANIUM; GOLD; GRAIN BOUNDARY DIFFUSION; GRAIN GROWTH; METALLIC THIN FILMS; RECRYSTALLISATION; REVIEWS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR THIN FILMS; ***SILICON*** ; ZONE MELTING
ST ***oxidised Si substrates*** ; semiconductors; grain boundary mobility enhancement; ***surface gratings*** ; amorphous substrates; zone-melting recrystallization; surface-energy-driven grain growth; doping; ***ion bombardment*** ; ***Si films*** ; Ge; Au; SiO
CHI SiO sur, Si sur, O sur, SiO bin, Si bin, O bin; Si el; Ge el; Au el
ET Si; Ge; Au; O*Si; SiO; Si cp; cp; O cp; O

L7 ANSWER 180 OF 187 INSPEC (C) 2006 IEE on STN
AN 1987:2793648 INSPEC DN A87011034
TI The diffraction of light by transient ***gratings*** in crystalline, ***ion*** - ***implanted*** , and amorphous ***silicon*** .
AU Vaitkus, J.; Harasiunas, K.; Gaubas, E.; Jonikas, L.; Pranaitis, R. (Dept. of Semicond. Phys., Vilnius V. Kapsukas State Univ., Lithuanian SSR, USSR); Subacius, L.
SO IEEE Journal of Quantum Electronics (Aug. 1986) vol.QE-22, no.8, p.1298-305. 28 refs.
Price: CCCC 0018-9197/86/0800-1298$01.00
CODEN: IEJQA7 ISSN: 0018-9197
DT Journal
TC Theoretical; Experimental
CY United States
LA English
AB The results of applying the transient ***grating*** technique to single crystals of ***silicon*** are analyzed, taking into account free-carrier absorption and nonlinear recombination. Using different configurations of this technique, the exposure and decay characteristics of ***gratings*** in the volume or surface of ***silicon*** of different properties (pure, ***doped*** with deep or shallow traps, ***ion*** ***implanted*** , or amorphous) are investigated. The presence of impurities does not change the dominant mechanism of refractive index modulation by the photogenerated nonequilibrium carriers. Increase damage of ***Si*** leads to a decrease in carrier diffusion (implanted ***Si***) with, in the case of amorphous ***Si*** , domination of ***grating*** decay by carrier recombination. The properties of ***gratings*** in high external DC or AC (microwave) electric fields allows the evaluation of hot-carrier diffusion coefficients.
CC A4265 Nonlinear optics; A4280F Gratings, echelles; A7220J Charge carriers: generation, recombination, lifetime, and trapping
CT AMORPHOUS SEMICONDUCTORS; DIFFRACTION ***GRATINGS*** ; ELEMENTAL SEMICONDUCTORS; LIGHT DIFFRACTION; NONLINEAR OPTICS; ***SILICON***

ST ***crystalline Si*** ; microwave electric fields; ***ion-implanted***
*** Si*** ; semiconductor; deep traps; ***transient grating*** ; single
crystals; free-carrier absorption; nonlinear recombination; decay
characteristics; shallow traps; refractive index modulation;
photogenerated nonequilibrium carriers; ***implanted Si*** ;
amorphous Si ; hot-carrier diffusion coefficients
ET Si

L7 ANSWER 181 OF 187 INSPEC (C) 2006 IEE on STN
AN 1982:1897922 INSPEC DN B82041141
TI ***Silicon*** as a millimeter-wave monolithically integrated
substrate-a new look.
AU Rosen, A.; Caulton, M.; Stabile, P.; Gombar, A.M.; Janton, W.M.; Chung,
P.Wu; Corboy, J.F.; Magee, C.W. (RCA Labs., Princeton, NJ, USA)
SO RCA Review (Dec. 1981) vol.42, no.4, p.633-60. 116 refs.
CODEN: RCARCI ISSN: 0033-6831
DT Journal
TC Bibliography; Experimental
CY United States
LA English
AB Materials suitable for use as monolithic substrates are summarized. A
study of the properties of ***silicon*** substrates as transmission
line media shows that serious consideration should be given to them for
use at mm-wave frequencies. It is concluded that for ***silicon***
resistivities of 2000 ohm-cm or greater, microstrip loss in
silicon at mm-wave frequencies is only slightly higher than that
in GaAs or alumina. The substrate thickness (using the latest dispersion
characteristics) is especially considered in circuit design. These effects
on the design of 3-dB interdigitated and branch-line ***couplers***
are demonstrated. Fabrication of ***silicon*** IMPATT diodes operating
up to 200 GHz has been accomplished by novel techniques that maintain the
silicon 's high resistivity. The authors report on diodes yielding
25 mW CW at 102 GHz, 16 mW CW at 132 GHz, and 1 mW at 195 GHz. The
techniques described are ***ion*** ***implantation*** , laser
annealing, unique secondary- ***ion*** mass spectrometry (SIMS),
profile diagnostics, and novel wafer thinning. The utilization of these
technologies paves the way for the processing of ***silicon***
monolithic mm-wave integrated circuits.
CC B1310 Waveguides; B1350F Solid-state circuits and devices; B2520C
Elemental semiconductors; B2550 Semiconductor device technology; B2550G
Lithography; B2560H Junction and barrier diodes; B2570 Semiconductor
integrated circuits
CT ELEMENTAL SEMICONDUCTORS; IMPATT DIODES; INTEGRATED CIRCUIT TECHNOLOGY;
ION ***IMPLANTATION*** ; LASER BEAM ANNEALING; MICROWAVE
INTEGRATED CIRCUITS; MONOLITHIC INTEGRATED CIRCUITS; ***SILICON*** ;
STRIP LINES; SUBSTRATES
ST ***Si monolithic ICs*** ; EHF; ***3 dB interdigitated couplers*** ;
frequencies 100 to 200 GHz; transmission line media; microstrip loss;
substrate thickness; dispersion characteristics; ***branch-line***
*** couplers*** ; IMPATT diodes; ***ion implantation*** ; laser annealing;
secondary-ion mass spectrometry; SIMS; profile diagnostics; wafer
thinning; monolithic mm-wave integrated circuits
ET As*Ga; As sy 2; sy 2; Ga sy 2; GaAs; Ga cp; cp; As cp; B; Si; Cs*I; ICs; I
cp; Cs cp

L7 ANSWER 182 OF 187 INSPEC (C) 2006 IEE on STN
AN 1980:1589335 INSPEC DN A80101102; B80052379
TI ***Ion*** ***implanted*** ***grating*** type ***Si***
solar cells.
AU Hwang, H.; Tang, R.; Loferski, J.J.; Yang, Y.-C. (Dept. of Electrical &
Power Engng., Nat. Tsing Hua Univ., Hsinchu, Taiwan)
SO Japanese Journal of Applied Physics (1979) vol.19, suppl.19-1, p.527-32.
17 refs.
CODEN: JJAPA5 ISSN: 0021-4922
Conference: Proceedings of the 11th Conference on Solid State Devices.
Tokyo, Japan, 1979
Sponsor(s): Japan Soc. Appl. Phys
DT Conference Article; Journal
TC Theoretical; Experimental
CY Japan
LA English
AB ***Silicon*** ***grating*** -type solar cells have been fabricated

by ***ion*** - ***implantation*** techniques. The cells
as-fabricated showed maximum Voc of 0.54 V, and maximum Isc of 34 mA/cm2
(without AR coating) under an AM1 illumination, and maximum FF of 0.68.
The series resistance problems were examined, and metal gridding
superimposed on the ***grating*** was found essential. The effects of
impurity profiles and the annealing conditions have been studied. For a
fixed value of junction depth, the cell output peaked for doping levels
around 1019 cm-3. For a fixed ***grating*** geometry, it was found
within the limits of the ***implanted*** ***ion*** concentration,
the deeper the junction the higher the cell efficiency, which is in
contrast to the commonly shallow junction cells. It was also found that
slow cooling from thermal annealing is essential in improving the
ion - ***implanted*** solar cell efficiencies.

CC A6170T Doping and implantation of impurities; A6170W Impurity
concentration, distribution, and gradients; A6180J Ions; A8140G Other heat
and thermomechanical treatments; A8630J Photoelectric conversion: solar
cells and arrays; B2550B Semiconductor doping; B8420 Solar cells and
arrays

CT ANNEALING; DOPING PROFILES; ELEMENTAL SEMICONDUCTORS; ***ION***
IMPLANTATION ; SEMICONDUCTOR DOPING; ***SILICON*** ; SOLAR CELLS

ST AM1 illumination; series resistance; impurity profiles; annealing
conditions; ***Si grating type solar cells*** ; ***ion***
*** implantation*** ; cooling; elemental semiconductors

L7 ANSWER 183 OF 187 INSPEC (C) 2006 IEE on STN

AN 1980:1587185 INSPEC DN A80093934; B80052426

TI ***Ion*** ***implanted*** ***grating*** type ***Si***
solar cells: junction depth dependence.

AU Hwang, H.L.; Liu, D.C.; Tang, R.S.; Kao, Y.R.; Loferski, J.J. (Nat. Tsing
Hua Univ., Hsinchu, Taiwan)

SO Fourteenth IEEE Photovoltaic Specialists Conference 1980
New York, NY, USA: IEEE, 1980. p.381-5 of 1411 pp. 9 refs.
Conference: San Diego, CA, USA, 7-10 Jan 1980
Sponsor(s): IEEE

DT Conference Article

TC Theoretical; Experimental

CY United States

LA English

AB ***Silicon*** ***grating*** -type solar cells in which the light
receiving surface is covered by a finely spaced ***grating*** of
charge collection barriers were fabricated by ***ion***
implantation . The as-fabricated cells exhibited Voc of 0.54 V,
Isc(AM1) of 32 mA/cm2 (without AR coating), a fill factor of 0.68 and a
conversion efficiency of 11%. It was found that annealing at 1100 degrees
C for a few minutes followed by a slow cooling rate was required to obtain
optimized performance. For a fixed ***grating*** geometry deep
junctions resulted in better cells than shallow junctions within the boron
implants. The author describes the results of numerical simulation in
which alternating direction implicit methods were employed to obtain the
collection efficiencies of ***grating*** cells with varying junction
depths. The computed AM1 I-V characteristics of ***grating***
Si cells are also described.

CC A8630J Photoelectric conversion: solar cells and arrays; B8420 Solar cells
and arrays

CT BORON; ELEMENTAL SEMICONDUCTORS; ***ION*** ***IMPLANTATION*** ;
SILICON ; SOLAR CELLS

ST junction depth; charge collection barriers; ***ion implantation*** ;
fill factor; conversion efficiency; collection efficiencies; ***Si*** ;
B; ***grating type solar cells*** ; alternating direction implicit
numerical simulation

ET Si; C; I*V; I-V; B

L7 ANSWER 184 OF 187 INSPEC (C) 2006 IEE on STN

AN 1980:1543285 INSPEC DN B80035013

TI X-ray lithography by synchrotron radiation of the SOR-RING storage ring.

AU Aritome, H.; Matsui, S.; Moriwaki, K.; Namba, S. (Faculty of Engng. Sci.,
Osaka Univ., Toyonaka, Osaka, Japan)

SO Journal of Vacuum Science and Technology (Nov.-Dec. 1979) vol.16, no.6,
p.1939-41. 2 refs.
CODEN: JVSTAL ISSN: 0022-5355
Conference: Proceedings of the 15th Symposium on Electron, Ion, and Photon
Beam Technology. Boston, MA, USA, 29 May-1 June 1979

DT Conference Article; Journal
TC New Development; Practical; Experimental
CY United States
LA English
AB X-ray lithography by synchrotron radiation is a promising technique for a very high resolution replication of submicron patterns. The main disadvantage of X-ray lithography by synchrotron radiation is that the experimental system becomes large and expensive. In this report, the results of X-ray lithography by using the SOR-RING storage ring at an electron energy of 300 MeV is presented. The SOR-RING of the University of Tokyo has a radius of curvature of the electron orbit of 1.1 m and a total orbit length of 17.4 m. The fabrication method of X-ray masks for synchrotron radiation is described. As a pattern supporting material, a parylene film of 1-2 mu m thick is used. In this case, the wavelength range between 5-10 nm of synchrotron radiation is effective for exposure of resist. The optimum resolution of pattern replication would be obtained by the wavelength component. Moreover, pattern replication with large contrast is obtained. Line patterns, which are 100-500 nm wide, and ***grating*** patterns are replicated in PMMA resist with a large aspect ratio. The above patterns were transferred in various materials such as ***Si*** and SiO2 by reactive sputter etching. Etching mask patterns are replicated from the pattern of resist itself or fabricated by metal lift-off. Vertical-walled line patterns of 0.5- mu m-thick ***Si*** are obtained by resist as a mask. ***Ion*** - ***bombardment*** -enhanced chemical etching is also described as a pattern transfer method of submicron size.
CC B2550G Lithography; B2570 Semiconductor integrated circuits
CT MASKS; PHOTOLITHOGRAPHY; X-RAY APPLICATIONS
ST X-ray lithography; synchrotron radiation; high resolution replication; submicron patterns; 300 MeV; X-ray masks; parylene film; PMMA resist; SOR RING storage ring
ET Si; O*Si; SiO2; Si cp; cp; O cp

L7 ANSWER 185 OF 187 INSPEC (C) 2006 IEE on STN
AN 1980:1527024 INSPEC DN A80058805; B80029713
TI High quantum efficiency waveguide coupled photodetectors on ***silicon*** substrate.
AU Yao, S.K.; August, R.R. (Rockwell Internat. Electronics Res. Center, Anaheim, CA, USA)
SO Integrated and Guided-wave Optics Technical Digest
New York, NY, USA: IEEE, 1980. p.ME5/1-4 of 300 pp. 6 refs.
Conference: Incline Village, NV, USA, 28-30 Jan 1980
Sponsor(s): IEEE; Opt. Soc. America
DT Conference Article
TC Experimental
CY United States
LA English
AB Reports integrated optics waveguide coupled photodetectors made on ***silicon*** with 50% quantum efficiency. Efficient transition region bridging 7059 glass/SiO2/ ***Si*** waveguide and the detector are prepared with Ar+ implantation treatment. Controlled chemical etch profile is used to give reproducible efficient waveguide/detector coupling.
CC A4280L Optical waveguides and couplers; A4282 Integrated optics; A6170T Doping and implantation of impurities; B2520C Elemental semiconductors; B2550B Semiconductor doping; B4130 Optical waveguides; B4140 Integrated optics; B4250 Photoelectric devices; B4270 Integrated optoelectronics
CT ELEMENTAL SEMICONDUCTORS; INTEGRATED OPTICS; ***ION*** ***IMPLANTATION*** ; OPTICAL ***COUPLERS*** ; OPTICAL WAVEGUIDES; PHOTODETECTORS; ***SILICON*** ; SUBSTRATES
ST waveguide coupled photodetectors; integrated optics; 50% quantum efficiency; Ar+ implantation; chemical etch profile; efficient waveguide/detector coupling; ***7059 glass/SiO2/Si waveguide*** ; efficient transition bridging region; ***Si substrate***
ET O*Si; SiO2; Si cp; cp; O cp; Ar; Ar+; Ar ip 1; ip 1; Si

L7 ANSWER 186 OF 187 INSPEC (C) 2006 IEE on STN
AN 1980:1526587 INSPEC DN B80029151
TI Fabrication of a ***grating*** pattern with submicrometer dimension in ***silicon*** crystal by ***ion*** - ***bombardment*** -enhanced etching.
AU Moriwaki, K.; Masuda, N.; Aritome, H.; Namba, S. (Faculty of Engng. Sci., Osaka Univ., Toyonaka, Osaka, Japan)

SO Japanese Journal of Applied Physics (March 1980) vol.19, no.3, p.491-4
CODEN: JJAPA5 ISSN: 0021-4922
DT Journal
TC Practical
CY Japan
LA English
AB ***Ion*** - ***bombardment*** -enhanced etching (IBEE) as a means for fabrication of submicron pattern is described. Electron beam lithography and lift-off technique are used to form a Cr mask pattern for ***ion*** - ***bombardment*** . The etched depth can be controlled from 83 to 128 nm by varying the ion dose with an accuracy of 10 nm. A ***grating*** pattern with a period of 0.6 mu m is fabricated in a ***Si*** substrate by IBEE technique by using Ar+ ion. At an Ar+ ion energy of 60 keV, the amount of side etching is observed to be 40 nm for a 0.21- mu m deep etched sample. This result shows the high resolution of IBEE.
CC B2550E Surface treatment and oxide film formation; B2550G Lithography
CT ELEMENTAL SEMICONDUCTORS; ETCHING; INTEGRATED CIRCUIT TECHNOLOGY; SEMICONDUCTOR TECHNOLOGY; ***SILICON*** ; SPUTTER ETCHING
ST ***grating pattern*** ; fabrication; submicron pattern; Cr mask pattern; ***ion bombardment enhanced etching*** ; electron beam lithography; lift off technique
ET Cr; Si; Ar; Ar+; Ar ip 1; ip 1

L7 ANSWER 187 OF 187 INSPEC (C) 2006 IEE on STN
AN 1976:855943 INSPEC DN A76007590; B76005354
TI ***Ion*** - ***doped*** layer-a new material for recording holograms.
AU Shtyrkov, E.I.; Khaibullin, I.B.; Galyautdinov, M.F.; Zaripov, M.M.
SO Optics and Spectroscopy (May 1975) vol.38, no.5, p.595-7. 7 refs.
CODEN: OPSUA3 ISSN: 0030-400X
Translation of: Optika i Spektroskopiya (May 1975) vol.38, no.5, p.1031-4. 7 refs.
CODEN: OSFMA3 ISSN: 0030-4034
DT Journal; Translation Abstracted
TC Practical; Experimental
CY USSR; United States
LA English
AB The authors claim that ***ion*** - ***doped*** amorphous semiconductors may be a suitable medium for recording holograms. They report an examination on ***silicon*** doped with P31 for recording in the infra-red with a reconstruction in the visible region. Details are given of the energy to 'record', the spatial frequency of the ***grating*** and the potential materials suitable for such recording.
CC A0768 Photography, photographic instruments and techniques; A4240H Photographic and recording problems; A4240K Holographic instrumentation and techniques; B4350 Holography
CT HOLOGRAPHY; PHOTOGRAPHIC MATERIALS
ST amorphous semiconductors; spatial frequency; hologram recording; IR recording; visible reconstruction; ***ion doping***

=> d his

(FILE 'HOME' ENTERED AT 08:01:12 ON 26 JAN 2006)

FILE 'STNGUIDE' ENTERED AT 08:01:20 ON 26 JAN 2006

FILE 'HOME' ENTERED AT 08:01:24 ON 26 JAN 2006

FILE 'CAPLUS, INSPEC' ENTERED AT 08:01:32 ON 26 JAN 2006

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L1     142298 S (GRATING OR COUPLER OR DFG)
L2          0 S CYSTAL?(5A)SILICON
L3      72758 S CRYSTAL?(5A)SILICON
L4      63412 S AMORPHOUS(5A)SILICON
L5         36 S L1 AND L3 AND L4
L6        744 S L1 AND (ION(5A)(IMPLANT? OR BOMBARD? OR DOP?))
L7        187 S L6 AND (SI OR SILICON OR SOI)
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